European Commission

Study about cross-border interoperability of powers and mandates

Study on semantic interoperability for representation powers and mandates

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List of abbreviations

A2A	Administration to Administration
A2B	Administration to Business
A2C	Administration to Citizen
AP	Access Point
B2A	Business to Administration
B2B	Business to Business
B2C	Business to Citizen
BRIS	Business Registers Interconnection System
C2A	Citizen to Administration
C2B	Citizen to Business
C2C	Citizen to Citizen
CEF	Connecting Europe Facility
DSIs	Digital Service Infrastructures
eID	electronic Identification
EIF	European Interoperability Framework
eSENS	Electronic Simple European Networked Services
eTS	electronic Trust Services
L-N	Legal person to natural person representation
L-L	Legal person to legal person representation
LOST	Legal, Organisational, Semantic and Technical EIF Interoperability layers
N-L	Natural person to legal person representation
N-N	Natural person to natural person representation
MS	Member State(s)
PEPPOL	Pan-European Public Procurement Online
PoC	Point of Contact
SP	Service Provider
SPOCS	Simple Procedure Online for Cross-Border Services
STORK	Secure idenTity acrOss boRders linKed

Glossary

Representation

The fact of representing one or more other persons, or groups, organisations and bodies, institutions and companies, i.e. to intervene on their behalf or acting on their behalf.

Mandate

Contract under which an entity (agent) undertakes to perform one or more legal acts in the interest of another person (principal); the mandate includes the acts for which it was awarded and those necessary for its completion.

Cross-border login

The ability for citizens from other European countries to log in to other European countries´ e-services with their own national e-ID and vice versa (e.g. using the STORK 2.0 infrastructure via the PEPS node).

e-CODEX

e-Justice domain enabling citizens and businesses to have cross-border access of legal means in Europe.

eDelivery

CEF building block to allow public administrations to exchange electronic data and documents with other public administrations, businesses and citizens, in an interoperable, secure, reliable and trusted way.

eInvoicing

CEF building block to allow public administrations to implement electronic invoicing in compliance with the eInvoicing Directive of the European Parliament and the Council.

e-SENS

Large-scale pilot project with the aim of consolidating, improving, and extending technical solutions based around the building block DSIs to foster digital interaction with public administrations across the EU.

eSignature

CEF building block to allow public administrations and businesses to accelerate the creation and verification of electronic signatures.

eIDAS-Node

Application component that can assume two different roles depending on the origin of a received request.

Large Scale Project STORK 2.0

The project aims at developing the European electronic identification and authentication area to establish interoperability of eID, both at the National and European levels.

Legal person is an entity constituted under, or governed by, the law of a Member State, irrespective of their legal form.

Natural person is an entity that is an individual human being who has its own legal personality.

1. Background

Electronic powers of representation and mandates allow natural and legal persons to act as representatives for other citizens or companies in e-Government services. The electronic nature of the mandates signifies that choosing and assigning a representative for the execution of required actions may be effectuated from a distance, i.e. without the need to physically visit a notary, lawyer or any other professional providing similar services. Furthermore, the digital aspect of such mandates significantly increases the speed, all whilst reducing the steps needed to give, use and revoke powers of representation. Finally, bearing in mind that electronic mandates are kept in publicly held registries or other forms of electronic memory, their content and effectiveness can be altered almost instantaneously, in turn suggesting virtually impregnable security features.

Nevertheless, despite the great potential clearly demonstrated by digital powers of representation and mandates, their use in electronic form is quite uncommon within the European countries. Among the MS that do use them, electronic mandates schemes and policies are national and usually do not contemplate the possibility to use those mandates in cross-border scenarios.

This being said, their limited use is mostly due to the fact that they face a number of obstacles for full-fledged uptake, especially in European cross-border instances. In this sense, the most relevant barriers for market integration and the emergence of pan-European solutions in the field of electronic mandates can be easily conveyed through the Legal, Organisational, Semantic, Technical (LOST) layers stemming from the EIF. The main legal obstacles pertain to the legal validity of e-mandates across different countries, semantic interpretations and definitions are not aligned, organisational bodies in charge of handling such representation powers lack clarity on responsibilities and liabilities of different stakeholders, and lastly European technical harmonisation of such systems has not occurred due to the differences in feasible approaches and maturity of each Member State in this context.

In order to tackle these barriers, a number of European actions and initiatives have been launched through the ISA and ISA[2] Programmes of the European Commission with the aim of establishing and consolidating interoperability among EU and EEA MS. Most notably, building on the initial success of STORK, STORK 2.0 strives towards the creation of a fully operational framework and infrastructure for electronic identities and authentication in the EU. In doing so, it relied on the development of common specifications and building blocks for interoperable legal identities and mandates, which are in turn based on the interoperability infrastructure developed in STORK. Furthermore, STORK 2.0 Pilots in eLearning, eBanking, eBusiness and eHealth aim to demonstrate real-life situations for the usage of e-ID and e-mandates, all whilst addressing challenges and issues preventing widespread uptake and implementations of such systems. Strong links to this topic are also evident in EU initiatives such as epSOS, PEPPOL, SPOCS, e-CODEX, e-SENS, CEF, etc.

2. Executive Summary

The study on semantic interoperability for representation powers and mandates has as its aim to discover and develop semantic tools enabling the usage of cross-border powers of representation and mandates within Europe. Nevertheless, since there are currently no commonly used semantic approaches among Member States, achieving semantic interoperability in the field of powers and mandates will require substantial development, coordination and cooperation throughout the subsequent stages of its progress. This document is the first result/deliverable within the scope of this study, and its main purposes are to provide an overview of the state of electronic representation powers and mandates across Member States, as well as to serve as principal input for the second stage of the study which corresponds to the identification of gaps and definition of semantic requirements in the field of electronic representation powers and mandates.

As the first decisive step towards achieving the study's objectives, this document aims to present a number of key elements required to establish European powers and mandates' interoperability. In doing so, the first goal was to establish a short-list of Member States to be assessed, firstly in order to increase the feasibility of the study, as well as to obtain the desired and most relevant results. The applied method in this case involved in-depth desk research to assess the potential ability of Member States to effectively respond to questions related to electronic powers of representation and mandates, which was in turn the main criteria for their selection. This in turn led to the creation of a list of 14 Member States (Austria, Belgium, Czech Republic, France, Spain, Italy, Lithuania, Portugal, Slovakia, Slovenia, Netherlands, Luxembourg, Germany and Estonia) to be assessed at this stage of the study. The 14 Member States were contacted and the questionnaire for the study was shared with them, however from the countries contacted, only ten Member States provided responses to the questionnaire. Thus, in order to ensure that the study is representative of current EU practices in representation powers and mandates, the initial list of countries for assessment was expanded with four additional Member States, i.e. Greece, Finland, Norway and Sweden, all of which responded to the questionnaire and participated in the consultation.

The second goal entailed identifying a list of prioritised services, whereby priority is assigned based on the need to use powers of representation and mandates in order to execute the service. In this instance, both desk research and consultations with Member States through questionnaires, were taken into account in order to ensure that only relevant services are incorporated into the final list of prioritised services. The final list was then further distilled for the purpose of nominating 4 services which are exemplary of the 4 different representation types, to be applied in the business/use cases described further on in the text. An initial list of over 20 services that could require the use of representation powers and mandates was compiled based on the desk research results and classification criteria, and it was further shortened through Member States' input. A service matrix was included as part of the questionnaire sent to Member States, and its aim was to enable respondents to prioritise and short-list services with the greatest need for PoRs in their country's context. Upon analysis of the responses received from Member States, 4 services with common prioritisations across responding Member States were selected for further business case representation. The four services short-listed correspond to registering/opening a business cross-border, submitting a tender for public procurement cross-border, managing a bank account cross-border and declaring corporate tax cross-border.

The third goal revolved around assessing and evaluating the AS-IS situation with regards to the electronic powers of representation and mandates in cross-border scenarios for each

Member State analysed. The evaluation was completed through a tailor-made assessment framework, partly inspired by the ISA Interoperability Maturity Model[1], as it assesses the Member States' responses acquired during the consultations through the EIF LOST Interoperability layers. The responses were entered into the Maturity Model, through which each response was assigned a score within its respective domain, i.e. legal, organisational, semantic or technical. Upon having concluded the assessment of the responding Member States, two important revelations were made. The first conclusion pertains to the overall maturity of Member States' electronic PoR capabilities, which currently corresponds to the Applied level (3), i.e. not very mature. The second conclusion revealed that despite the relative immaturity at an overall level, several countries, i.e. the Netherlands, Austria and Finland, stood out as PoR pioneers, which is evident from their respective average scores of (4.1), (4.3) and (3.6). Additionally, based on the results from the assessment framework, the three highest scoring Member States were chosen for targeted assessment. The objective of the targeted assessment was to discover and produce a detailed overview of Powers of Representation and mandates in the three MSs, including types, uses and information requirements. The targeted assessment allowed for the discovery of the fact that despite their geographic, historic and legal differences, substantial similarities among the different Member States' representation powers and mandates exist. This in turn suggests that commonalities among the different countries' PoR systems may be extracted and utilised towards the creation of a universal European PoR system.

Finally, and as mentioned earlier, the 4 services (opening a business cross-border, submitting a tender for public procurement cross-border, managing a bank account cross-border and finally, submitting a corporate tax declaration cross-border) found to be most appropriate to convey the 4 representation types (Natural-Natural, Legal-Natural, Natural-Legal and Legal-Legal) were embedded into 4 different business cases. Furthermore, a fifth service that would strongly benefit from PoR was identified, and as such corresponds to the access to a patient's summary cross-border. Accordingly, a business case describing the service in a context utilising PoR was created for each of the services. Along with the description of the business cases, activity diagrams demonstrating the main actors and actions required to make use of PoRs in their respective service have been created, and may be used to better grasp how the usage of mandates may be incorporated in the consumption of electronic public services in the Digital Single Market. Finally, use cases depicting the activity diagrams in a structured format have been created and are the ultimate part of each business case described. It is important to note that the business cases are built upon a conceptual framework, since the majority of Member States have not yet successfully implemented such mechanisms, and therefore lack detailed specifications with regards to the actual functioning of such systems. Thus, it is recommended to view their output as conceptual solutions, rather than demonstrations of existing   solutions.

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[1] https://joinup.ec.europa.eu/elibrary/document/interoperability-maturity-model

3. Introduction

3.1 Project scope and objective

In order to instigate and facilitate the use of electronic power of representation and mandates cross-borderly, the European Commission (DIGIT, DG CNECT), through the ISA[2] Programme Action 2016.12, seeks to take action and create a shared European data model for representation powers and mandates. Creating a semantic framework will ultimately allow powers and mandates' data originating from the information systems of one country to be processed automatically by the information systems in another country.

This ISA[2] Action will build upon and follow the results of previous and ongoing initiatives, such as STORK 2.0[2], eSENS[3], CEF eID[4] and ISA Core Vocabularies[5].

This being said, this study[6] aims to accomplish two main strategic objectives:

- Identify and prioritise the cross-border services that require cross-border interoperability of power and mandates, and
- Identify the information requirements of the above mentioned and the solutions that could meet these requirements as well as ranking of these solutions by the developed feasibility criteria.

3.2 Document objectives

The scope of the current document is to focus on the first objective stated above, in order to obtain a clear vision of the work required to develop a common data model for the electronic identification of legal and natural entities, their representation and mandates.

In order to achieve this goal, the state of affairs of the electronic powers of representation and mandates in different MS and European-related projects will be studied. Special emphasis will be placed on the countries which have a more mature implementation of the electronic mandates systems and could provide benchmarking or best practices. It will also provide information on prioritised services requiring interoperability for electronic recognition of power and mandates at national and cross-border level.

Additionally, existing problems and opportunities with respect to cross-border recognition of power and mandates will be spotted, along with the barriers, limitations and benefits which cross-border interoperability of power and mandates will bring about. Stakeholders and actors which have the need to solve these problems or to fulfil opportunities will also be addressed.

Therefore, the outputs delivered will be a list of services, a set of classification criteria, along with the responses to the questionnaires sent by the MS, the AS-IS analysis and the business cases. The combined outputs will be used to support the second strategic objective of the study: the identification of common semantic requirements to enable the use of interoperable interconnection of representation information.

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[2] https://www.eid-stork2.eu/
[3] https://www.esens.eu/
[4] https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eID
[5] https://joinup.ec.europa.eu/asset/core_vocabularies/description
[6] Project request: ABC III-000386-6000466383-REQ-01-ATT-01

3.3 Document structure

The information offered in this study is organised as follows:

- Chapter 1: Introduces the background for electronic powers of representation and mandates.
- Chapter 2: Highlights the document's main ideas via an executive summary.
- Chapter 3: Presents the study context, stating its scope and objectives and the present document goals.
- Chapter 4: Elaborates on the approach and methodology used to engage this assessment.
- Chapter 5: Describes services, main initiatives and projects related to electronic cross-border mandates.
- Chapter 6: AS-IS analysis.
- Chapter 7: Presents six business cases that would describe the overall processes and flows of events based upon a conceptual framework.
- Chapter 8: Conclusions.
- Annex I: Service matrix.
- Annex II: Assessment framework.

4. Approach and Methodology

The following chapter serves to describe the phase approach and methodology used for: (i) the identification of an **initial list of services** with potential needs related to electronic representation of powers and mandates, which will run in parallel with (ii) the **identification of a classification criteria** of those. Once these two phases are completed, the third phase will move towards a (iii) shortlist of priority cross-border services that will be the base for (iv) the **Business Cases selection**, which will help to identify the information requirements' (second strategic objective of the study).

The synthesis of the methodology is represented in the image below:
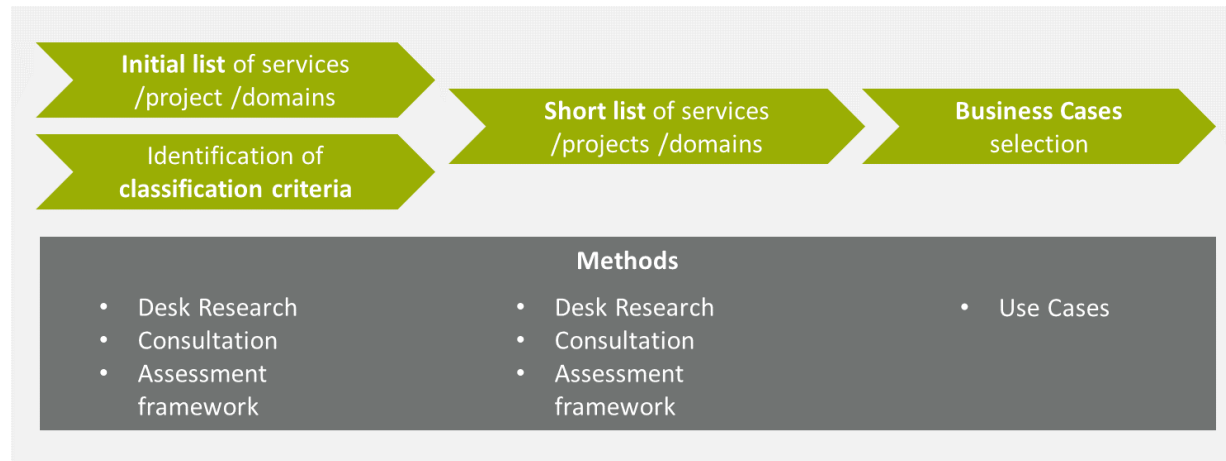
Figure 1 - Methodological approach

4.1 Methods

The methods used to support the methodological approach throughout the different phases are described next.

4.1.1 Desk research

Desk research constituted a sound starting point and a fundamental basis in order to understand the current situation on how electronic powers of representation and mandates are managed in the individual MS.

For that, a substantial amount of documentation was analysed, and in the following paragraph a brief summary of the most relevant sources of information reviewed related to the powers of representation and mandates is detailed:

- Large Scale Pilots such as STORK 2.0, eSENS, CEF building blocks;
- Related European initiatives and projects under the ISA[2] programme;
- Regulations: eIDAS Regulation, SEPA Regulation, International Private Laws of the relevant countries, Rome I Regulation, national laws that cover power of representation and mandates;
- Studies related to eGovernment services and electronic identification;
- Benchmarking and best practices in countries at the vanguard of electronic power of representation and mandates, such as Austria or Netherlands.

Since significant work had already been achieved through STORK, such as inclusion of attributes for natural and legal persons' identification and representation powers and mandates, as well as adapting the software building blocks to allow cross-border transfer of this kind of information, a starting point was analysing the final deliverables provided by the STORK 2.0 project. In this instance it was important to account for both the information stemming from the pilots carried out within the project, as well as the information pertaining to the common specifications developed for eventual common implementation. Emphasis was placed on information related to the management of representation powers and mandates, along with the use cases that require cross-border access to information regarding representation capabilities. For that, the STORK 2.0 project website was analysed as a whole, with careful study of documents[7] concerning mandate attribute management, legal entities' identification, process flows, functional and technical design, among an array of others.

The knowledge base was consolidated through the analysis of the eSENS modules and CEF building blocks, such as e-Documents, e-Delivery, e-ID, e-Signature and Semantics, and the Core Person and Core Business ISA Vocabularies along with other ISA[2] projects, like the Catalogue of Services and the Core Public Service Vocabulary Application Profile 2.0[8].

Consulting the existing regulations also constituted a solid part of the desk research, starting from eIDAS Regulation[9], SEPA Regulation, Rome I Regulation[10] and International Private Laws of the relevant countries, and moving onto the analysis of national laws that cover power of representation and mandates such as the General Part of the Civil Code Act[11] in the case of Estonia, which explains the general regulation of the power of representation, for example.

In order to come up with an initial list of services to be narrowed down later, several sources and projects' documents were consulted. One such project was the "Catalogue of Public Services", defined under ISA[2] programme along with 15 Member State who created a list of first level life events, as well as first and second level business events considered to be of top priority for the public services portals (for instance the Point of Single Contacts of the Service Directive). Other sources are the "Inventory of cross-border eGovernment services & Analysis of existing and future needs and demand for cross-border eGovernment services (SMART2011/0074)".

Other consulted studies that supported the selection of services were the "Feasibility study on an electronic identification, authentication and signature policy (IAS)", "Survey and Analysis of Existing eID and Credential Systems", "Report on the Pan-European use of electronic mandates for SEPA direct debit – issues and the way forward", " Study to support the implementation of a pan-European framework on electronic identification and trust services for electronic transactions in the internal market".

Upon research, one of the most developed countries with the most abundant online sources of information when it comes to electronic use of power of representation and mandates is Austria. This being said, detailed analysis was conducted on documents such as "Empowerment through Electronic Mandates – Best Practice Austria" by Thomas Rössler, "Cross-Border Legal Identity Management" by Bernd Zwattendorfer, Arne Tauber, Klaus Stranacher, Peter Reichstädter, "Scalable and Privacy-Preserving Variants of the Austrian

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[7] https://www.eid-stork2.eu/index.php?option=com_phocadownload&view=category&id=8&Itemid=174
[8] https://joinup.ec.europa.eu/asset/cpsv-ap/description
[9] https://ec.europa.eu/futurium/en/content/eidas-regulation-regulation-eu-ndeg9102014
[10] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32008R0593
[11] https://www.riigiteataja.ee/en/eli/530102013019/consolide

Electronic Mandate System in the Public Cloud" by Bernd Zwattendorfer and Daniel Slamanig, among other.

The same treatment was applied to the remaining 13 countries' (Belgium, Czech Republic, Estonia, France, Spain, Italy, Lithuania, Portugal, Slovakia, Slovenia, Netherlands, Luxembourg and Germany) available sources of information online.

From the research of all the above mentioned sources, the heterogeneous way in which each of the MS deals with its power of representation and mandates systems became more evident. This conclusion was later reinforced by the responses to the launched questionnaires provided by the relevant MS, which are explained further down in the next section.

4.1.2 Consultation

Having conducted extensive desk research, it was conceived that the information retrieved online is not sufficient to obtain a complete image regarding how electronic powers of representation are created and used in cross-border situations. Moreover, concrete information on the usage and (planned) systems in place for the overall handling of digital powers of representation and mandates is scarcely available at both European and MS level, thus involving MS and collaborating with them for the study was another important step, as the results of the questionnaire are considered to be of high significance and relevance to the success of the study.

The goal of the consultation was ensuring that an accurate representation of each country is reported, so that it may serve to develop sound European Commission initiatives and measures. Furthermore, it would enable the European Commission to assess the current progress of all respective countries included in the study, thus enclose them within future frameworks. It would also serve the different MS to obtain a point of comparison of their systems to the ones used in other MS, especially the most advanced ones in terms of the use of electronic mandates.

The questionnaire followed a general to specific type of approach, all whilst incorporating the EIF Legal, Organisational, Semantic and Technical (LOST) layers. In addition to the questionnaire, a service matrix containing services considered to be relevant in the context of powers of representation and mandates was incorporated, as well as a high-level list of workflow processes involved in the creation and usage of the representation powers and mandates. This structure was created to serve in the mapping, shortlisting and prioritising of the most relevant services and workflows that will later result in the selection of scenarios for business cases.

The questionnaire was sent to all MS and relevant stakeholder groups from CEF eID expert group and ISA representatives. It was launched on 25 January 2017 and remained open until 25 February 2017. The final input consisted in 9 sets of answered questionnaires gathered during the timeframe of a month from the following countries: *Austria*, *Norway, Finland*, *Greece*, *Netherlands*, *Slovenia*, *Slovakia*, *Sweden* and *Spain*.

4.1.3 Assessment framework

A tailored assessment framework was developed in order to facilitate the evaluation of the maturity of the different MS with regards to electronic power of representation and mandates and the presentation of conclusions.

The proposed framework, inspired by the European Commission's ISA Interoperability Maturity Model[12], encompasses **dimensions** and **levels,** which facilitates the assessment of each MS's state of play across the different EIF interoperability layers.

Detailed information about the used framework and the results can be found at section 6.

4.1.4 Use Cases

Use Cases were chosen to help at providing a high-level understanding of the performed steps through each Business Case modelled. Each Use Case contains information about the **actors** (e.g. natural or legal person or system) involved, the **goals** (i.e. expected objectives to be achieved), the **assumptions** made and, finally, the **flow** that the actor does along the process. Additionally the Use Cases will be supported by activity diagrams.

4.2 Initial list of services

Following the same general to specific type of approach, for the further selection of six relevant business cases, an initial list of electronic services related to the use of powers and mandates at European and MS level was singled out.

Considering the vast number of potential public services available within the MSs and at a European level, in order to select the most relevant ones in the context of representation of power and mandates, different initiatives developed under the Digital Agenda scope were considered. As mentioned in the desk research section, the "Catalogue of Public Services", defined under ISA^2 programme served as a base, together with the representation of the service collection defined in action 91 of the Digital Agenda for Europe, where MS agreed on a common list of key cross-border public services related to specific domains such as moving and residence, health, employment, procurement and business services.

Several key countries' (Austria, Estonia, Belgium, etc. – the ones studied through desk research during the study) e-Government SPOC portals were consulted, and noted the type of services per life event and domains they are offering to the public. These were then correlated to the services and initiatives specified in the documents available on the STORK 2.0, eSENS and CEF portal.

It is important to add here, that before researching and selecting services for the MS, a classification criteria, further explained in the next section, was already applied. This being said, regarding the type of relationship between services, a common division for e-Government services are A2C, A2B, A2A and for the eService, B2B, B2C, C2C.

For the e-Government services, it was decided to cover only the A2B and A2C services. The reason is that the Digital Agenda focuses mainly on the A2B and A2C services, as it primarily tackles the mobility of citizens and businesses in the internal market. This would make A2A interactions mostly as background preconditions to these services, and by analysing A2B and A2C services the supporting role of cross-border interactions among administrations is not neglected. When checking the SPOC e-Government websites, it was also noticed that more relevance was provided to A2B and A2C services over A2A services, because the services aimed for administrations will generally not be provided or described in the e-Government portals.

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[12] https://joinup.ec.europa.eu/elibrary/document/interoperability-maturity-model

From all the above mentioned, the following set of services were selected and grouped by domain:

- **Business**
    - Register a new legal entity
    - Access & use a business service portal cross-borders
    - Incorporate a public, a limited or a cooperative company (or incorporate associations and trusts)
- **Financial**
    - Corporate/business tax declaration
    - Pay social contributions for employees
    - Income tax declaration
- **Administrative**
    - Register a new employee
    - Register real estate
    - Request ID documents
    - Apply for a driver´s license
    - Register for a pension
    - Acceptance/disclaimer of inheritance
    - Voting registration
- **Banking**
    - Contract loans with banks
    - Payment services: mandate has to be granted by the payer to the biller
    - Open a cross-border bank accounts
    - Access cross-border bank accounts
- **Health**
    - Access to patient summary/health records
    - Act in the name of a patient at a health facility
- **Procurement**
    - Submit a tender for public procurement
- **Education**
    - Cross border access to academic records
    - Enrol as a student
- **Legal**
    - Register for legal aid: representation for legal cases

This list of services was included in the questionnaire sent to the MS with the aim of serving as a base for the responses to the questionnaire when selecting which are the most used in the context of national and cross-border electronic mandates.

4.3 Identification of classification criteria

The second phase focused on shortening the initial list of proposed services with needs related to representation of powers and mandates. In order to achieve this objective, a classification criteria was applied, which was grouped between **qualitative** and **quantitative** criteria, as represented below:
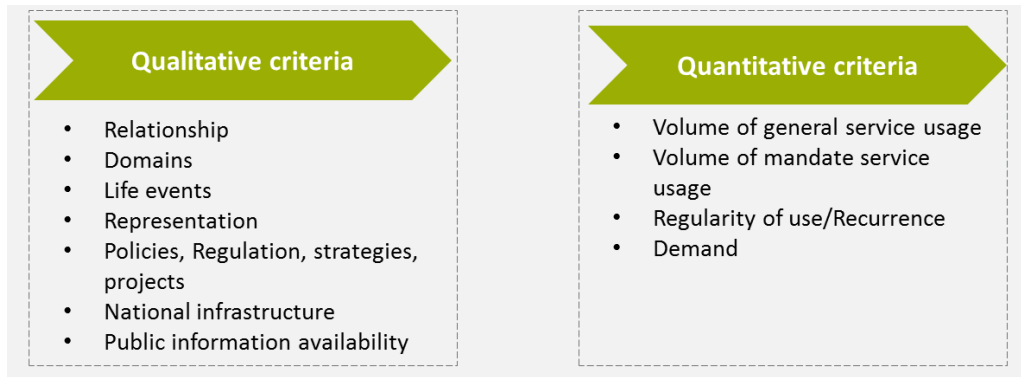
Qualitative criteria	Quantitative criteria
• Relationship • Domains • Life events • Representation • Policies, Regulation, strategies, projects • National infrastructure • Public information availability	• Volume of general service usage • Volume of mandate service usage • Regularity of use/Recurrence • Demand

Figure 2 - Classification criteria

The qualitative criteria, as part of the classification criteria, were defined based on the concepts intrinsically relevant to representation powers and mandates. As such, it stems that the usage of mandates may be triggered by **life events**, which are a result of persons' interactions governed by **laws, policies and regulations**. The persons (or actors) involved may be **citizens, businesses or administrations** interacting with the same, thus in turn creating relationships among these actors. Furthermore, in the event of representation, persons of different character, be it **legal or natural**, may represent one another, whereby the nature of the person representing another will often be linked to the **domain** (Business, Administration, Health, etc.) for which the representation will occur. Finally, the capabilities and the extent to which a person will be able to effectively and efficiently represent another will be dependent on the **national infrastructure's** level of development. To concretely exemplify these concepts through a mandate usage scenario, envisage the following description. A citizen / natural person falls ill (**life event**), and visits a healthcare (**domain**) institution / professional (**relationship**). The healthcare professional as such will have access to the patient's health records (**representation**), however the patient's privacy in this matter is safeguarded by data privacy legislations (**laws, policies, regulations**), and thus infringement of confidentiality would be sanctioned. Moreover, the speed and extent to which the healthcare professional will be able to access the patient's records will depend on the **national infrastructure** in place in the country, which is charged with the transmission of such information.

Among qualitative criteria, the services were divided per **domains** (as shown before), grouped into the financial, administrative, legal, banking, health, education, business, procurement and legal. These domains' selection was also based on previous Large Scale Pilots working on cross-border digital public services, such as epSOS - covering healthcare, SPOCS - focusing on business, E-CODEX - for justice, STORK 2.0 - for eID, PEPPOL - for procurement and moving services forward, which consists of a mixture between health, public procurement, business mobility and justice. Moreover, the banking domain was included as it plays a crucial role in the power of representation and mandates context, for example having their own type of regulation, the SEPA Regulation[13].

Another classification criteria consists in dividing the services per **life events**, usually divided between businesses' and citizens' life events. According to the "Catalogue of Public Services" ISA[2] project, the most used ones for business life events are: starting a business, starting cross-border business, doing business and closing business. For citizens' life events they are: getting a child, becoming a (social) caretaker, starting education, looking for a new job,

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[13] http://www.europeanpaymentscouncil.eu/index.cfm/sepa-direct-debit/the-sdd-mandate/

losing/quitting a job, looking for a place to live, changing relationship status, starting to drive a vehicle, travelling abroad, moving to/from the country, going into military service, facing an emergency/health problems, facing a crime, getting retired and decease of a relative.

The life events short-listed for our classification of cross-border services are:

- Doing business/ Regular business operations;
- Looking for a place to live;
- Starting to drive a vehicle;
- Facing a crime/ Starting a small claims procedure;
- Starting business;
- Looking & losing a job;
- Starting education;
- Facing an emergency/health problems;
- Getting retired.

Furthermore, considered as relevant is the **representation** type between the mandatee and the mandator, or the represented and the representing persons. Therefore, the services were grouped by type, including legal to legal, legal to natural, natural to legal and natural to natural representation. The business cases will be selected to represent each one of the four types of representation.

Essential aspects to be taken into account when selecting public services are also the **policies, regulations,** European and national **strategies** especially related to eID solutions.

Similarly, the STORK 2.0 project has also contributed significantly in developing an operational framework and infrastructure implementing eID for secure electronic authentication of legal persons, including facilities for the management of representation powers and mandates. STORK 2.0 had expanded STORK settings to incorporate particularities for legal persons and representation powers and mandates, and adapted the software building blocks to allow cross-border transfer of this kind of information.

This being said, a well-grounded service selection criteria implies focusing on cross-border services that have a medium to high service maturity in using eIDs. This could go hand in hand with selecting electronic cross-border services that have a European and, more importantly, a **national infrastructure** available to support them, and in the best of case, the e-mandates solution.

From a **quantitative** perspective, the "Study on the Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers, SMART 2011/0074"[14], or the "Study on Stakeholder Requirements for European eGovernment Services, by IDABC Programme"[15], among others, provided useful statistics that contributed in forming a solid idea regarding the frequency of service usage, country-specific service usage prioritisation and potential mandates' generation needs.

For that matter and as an example, the "Study on the Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers", contains a list of down-filtered services together with an estimation of the EU27 cross-border users per year and the most used cross-border services. In order to obtain these results, a

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[14] https://ec.europa.eu/digital-single-market/en/news/final-report-study-analysis-needs-cross-border-services-and-assessment-organisational-legal

[15] http://ec.europa.eu/idabc/en/document/3880/5644.html

combination of the different methodologies were used and pertain to statistical analysis, survey, holistic qualitative assessment and stakeholder workshops.

These types of studies are helpful when assessing the importance of the selected services, since the more potential users a service has cross-border and the more used it is, the more probable it is that a mandate can/will be used in order to perform that service.

However, statistical usage of the services should be weighed and interpreted accordingly. For example, there is a risk that low usage may simply illustrate poor online service quality, and not necessarily the lack of desire to apply for that particular service. It is for this reason that several studies and sources should be considered for cross-comparison.

Another interesting example comes from "Study on Stakeholder Requirements for European e-Government Services" [16]. It establishes two sets of ranked and defined European e-Government services, one for businesses and one for citizens. Therefore, for citizens, the services considered most relevant at European level include pensions (62%), tax declaration and refunding (59%), public health insurance (56%), residence and work permits (58% and 52% respectively) as well as driving licenses (52%). For businesses, the highest ranking services are VAT refunding (63%), declarations of excise goods (60%), registration of a new company (58%) and of intellectual property (35%) as well as public procurement (11%).

4.4 Short list of services

Applying the classification criteria to the initial list of services will result into a narrower, more workable list of cross-border services which will serve for the selection of six most important business cases to be studied in more detail.

For that matter, from the **quantitative criteria** previously discussed, it is noticed that the most important services in terms of volume and regularity of use/demand are: register a domicile, request ID documents, register for legal aid, access to patient summary, income tax declaration, register a new legal entity and consult the business register.

From the **qualitative criteria,** one possibility of service prioritisation would be by domains selected in STORK 2.0, which are banking, health, education and business. Hence priority can be given exclusively to services belonging to these domains.

Nonetheless, the most important prioritisation system when it comes to shortlisting the services is the classification the MSs' provided themselves in the questionnaires. The countries that contributed were Norway, Spain, Finland, Greece and Sweden.

Having merged the responses obtained from the MS with those from the qualitative and quantitative criteria previously explained, the most common services that would require power of representation and mandates are: *register a new legal entity, submit a tender for public procurement, open a bank account, submit a corporate tax declaration, access and use of a business service portal, register real estate, access to patient summary/health records, manage bank accounts, request ID documents, register for a pension, accept/disclaim of inheritance, contract loans with banks, income tax declaration, pay social contributions for employees, and access to academic records.*

A complete list of the prioritized services is included in Annex I.

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[16] http://ec.europa.eu/idabc/servlets/Docc7f6.pdf?id=19649

4.5 Business Case selection

Aligned with the information gathered via desk research and relevant MS, CEF eID and ISA[2] representatives, and parting from the short-list of services explained in the previous chapter, six business cases were selected. Moreover, it was ensured that the chosen business cases were further aligned with the prioritised services' responses provided by MS. In doing so, care was taken to focus the business cases on services specified by at least the majority of the responding MS. Thus, the purpose of the business cases is to demonstrate the overall processes and flows of events through potentially feasible conceptual scenarios demonstrating the creation and usage of powers of representation and mandates, which would go hand in hand with general use cases detailing the particularities of each business case.

As a result, the selected business cases correspond to: **opening a business** cross-border, **submitting a tender for public procurement** cross-border, **managing a bank account** cross-border and finally, **submitting a corporate tax declaration** cross-border. Moreover, each of the business cases exemplify a different type of relationship, whereby the first pertains to N-N, the second is L-N, the third is N-L, while the fourth one is L-L. Additionally, a final business case demonstrating **access to a patient summary** cross-border has been created in order to emphasise the centricity of the citizen and the citizen's needs in the provision of cross-border e-Government services in the Digital Single Market, in particular eHealth services in this instance.

5. Services and projects

The services with cross-border interoperability needs have previously been selected and prioritised through the designed classification criteria. Following this selection, this chapter provides insight into the powers of representation and mandates, describing the main Large Scale Pilots and initiatives related to electronic cross-border mandates, both at European and National level. Moreover, this section looks at the recent and future efforts invested and achievements made by Member States in order to develop cross-border electronic representation, as well as towards further consolidating the Digital Single Market.

5.1 National level

Thus, when it comes to concrete initiatives or projects that have been developed in the period 2011-2015 or 2016-2020 in terms of e-mandates, the tendency in European countries is implementing strategies to shift from paper to electronic powers of representation and mandates. These schemes, policies and pilots are nevertheless mostly at national level. Nevertheless, in some countries such as Sweden, a national solution for exchanging information about mandates is only a pending plan, with nothing concrete decided yet. At the moment, the possibility between European countries to use mandates in cross-border scenarios is hardly contemplated.

Although the usage of e-mandates will provide important benefits, in the case of some countries like Greece, for example, e-mandates have been used under the STORK2.0 (2012-2015) and eSENS, yet their implementation is not fully legally recognised and accepted, as paper format mandates are still required.

A similar occurrence is noticeable in Spain, where when it comes to general powers for acting on behalf of parties different than the public administration, these are managed through notaries in paper form. They do not have an electronic register for powers as such and all the public documents they produce are recorded in a general register.

Greater advances regarding e-mandates in the context of the power of representation have been accomplished when acting on behalf of others with public administrations. The Royal Decree 1671/2009, of 6 November, which partially develops Law 11/2007 of 22 June, regarding citizens' electronic access to public services, foresaw the existence of an electronic register for powers for the Spanish National Administration. A new Law 39/2015, of October 1st, about the Common Administrative Procedure for Public Administrations, obliges all public administrations to have an electronic register for powers by 2018, where all powers of representation for acting with the administrations must be registered. The notaries´ general registry will be made interoperable with the electronic registers for powers of the administrations, but only in relation to those documents stating the power to act with the administrations.

With regards to creating a central registry, Slovakia built the IS Central Registration System of Powers as a part of a project financed from ERDF funds. Furthermore, the system is planned to be upgraded into an SAAS service (Software-as-a-service) and is to be provided as a central component.

Greater advances have been made in some of the Scandinavian countries. In Finland, there is an ongoing eAuthorization project, which is part of the National Service Architecture. It enables online checking of a person's authority for making transactions on behalf of other persons or organisations, and creating digital authorisations. At the business-level, Norway is implementing a similar project called **KoFuVi**, which establishes common solutions for registration of digital contacts and authorisations, as well as making the information available

and retrievable (representation powers and mandates for businesses). It also sets out the legal obligation to register digital notifications and information in authoritative sources. At the civil-level, an automated service regarding mandates and representation powers is in progress in Norway. Additionally, there is some work being done with Folkeregistere, where representation powers regarding children and their parents/guardian are within scope.

The most advanced countries in terms of e-mandates offerings are Austria and Netherlands. Since 2011, Austria has had in place a system that allows the use of mandate information from constitutive registers through authentication with the Austrian eID (citizen card or mobile phone signature. In this instance, constitutive registers refer to the countries' authoritative data-sources, i.e. the Persons' Registry, Business Registry, etc.

In the Netherlands, between 2011 and 2015, the national eID scheme eRecognition (eHerkenning) for authentication and representation of legal entities was implemented. eRecognition is governed by a public-private board and eID solutions are provided by privately held eID companies. These companies operate several mandate management systems for registration of the powers a natural person can have to act on behalf of a legal entity. The Netherlands has also implemented a national solution, known as DigiD Machtigen, designed to allow for representation of citizens by other citizens. Moreover, several sector specific mandate management solutions have been developed in these years, both public and private. During the time between 2016 and 2018, both eRecognition and DigiD Machtigen will be used in real life services, all whilst mandate management in eRecognition and DigiD Machtigen are under constant evolution for the purpose of enriching their functionalities and improve uptakes. Finally, in terms of cross-border mandate management, it is a function supported only at an elementary level. For example, representatives of Dutch cross-border farmers can apply for services in Belgium (Vlaams Departement voor Landbouw en Visserij).

5.2 European level

5.2.1 STORK 2.0

Built on the results of STORK the STORK 2.0 Project aims at developing the European electronic identification and authentication area to establish interoperability of eID, both at the National and European levels. STORK 2.0 advances the first version of STORK regarding attributes as well as powers of representation and mandates. In addition to the MS already involved in STORK, six new countries joined the project, making it 19 countries participating in the development and implementation of STORK 2.0 (Austria, Belgium, Czech Republic, Estonia, France, Greece, Iceland, Italy, Lithuania, Luxembourg, Netherlands, Portugal, Slovenia, Slovakia, Spain, Sweden, Switzerland, Turkey and the United Kingdom).

Within STORK 2.0, several pilots were launched, related to different domains such as eBanking, business, health, etc., to demonstrate the interoperability possibilities eID can offer in real-life settings:

5.2.1.1 eLearning and Academic Qualifications pilot

With the objective of reducing the administrative burdens derived from the cross-border mobility of students, this pilot facilitates the data exchange between the institutions, contributing to the development of eLearning systems, facilitating a wider adoption of eID within the academic institutions and promoting online administrative procedures.

5.2.1.2 eBanking pilot

In line with the contribution, promotion and support of the Digital Single Market, the eBanking pilot aims at increasing the eID acceptance across the EU, by offering the possibility to establish bank accounts and manage mandates electronically across Europe. This pilot would have a positive impact both on the workplace mobility but also on the European financial services thanks to cross-border electronic authentication.

5.2.1.3 Public Services for business pilot

The objective of this pilot is to facilitate cross-border services for Businesses by reducing the administrative burdens, allowing administrative procedures to be carried out remotely. The main benefits would be, first, to have updated and accurate information and, second, to allow a greater business mobility.

5.2.1.4 eHealth pilot

This pilot aims at allowing and making common practice the cross-border electronic identification of patients (or representatives) using eID. It would thus be possible for them to authenticate and access electronic health records regardless of their location.

By building a common framework for cross-border federation of electronic identity and building interoperability on top of national eIDs, STORK supports the development of electronic cross-border mandates, where the classic eID "authentication" process is enhanced and evolves in an "authentication on behalf" process. The STORK platform is indeed extended thanks to STORK 2.0; and its specifications for the exchange of authentication attributes were enriched with specifications supporting electronic cross-border representation powers and mandates, as well as authentication on behalf of legal persons.

5.2.2 e-SENS

The e-SENS pilot project aims at developing an interoperability layer for public services in Europe, facilitating its cross-border digital deployment, and the communication with administration bodies, focusing especially on five building blocks: eID, semantics, eSignature, eDocument and eDelivery.

Consolidating and extending the objectives developed by STORK 2.0, e-SENS facilitates the administrative processes in the following domains:

- eHealth: easier access to health services while abroad
- eJustice: electronic issuing of a claim in a foreign court
- eProcurement: electronic bidding in other EU countries
- Business lifecycle: online completion of formalities for company setup abroad

By enabling a higher interoperability between public services around Europe and providing the bases for a platform for e-Government cross-border digital infrastructures, the e-SENS project not only supports the creation of the European digital single market but also contributes to:

- Facilitating access to public administration services by electronic means
- Reducing red tape
- Simplifying and modernising the administration
- Improving user-friendliness

The eID building block is especially related to electronic mandates as it is built on the knowledge gained during the STORK project, more precisely on the cross-border use of identities and exchange of attributes.

5.1.3 CEF Building Blocks

The CEF building blocks are a set of reusable tools and services developed mainly by Member States in various large scale pilots. They have the objective to ease the implementation of common technical specifications by public administrations in order to facilitate the delivery of digital public services across borders. They focuses on five domains: eID, eSignature, eDelivery, eInvoicing and eTranslation.

5.1.3.1 eID

This building block allows cross-border authentication, based on the interoperability of national electronic identification systems. Thanks to this building block, mutual recognition of national eIDs between the European Member States becomes possible, in line with the eIDAS legal framework.

5.1.3.2 eSignature

The eSignature building block focuses on the creation and verification of electronic signatures, both for public administration and for businesses. Thanks to interoperability and mutual recognition between the Member States, the legal value of documents signed electronically is thus recognised in other Member States than the one from the signatory.

5.1.3.3 eDelivery

The purpose of this building block is to help public administrations to exchange electronic data and document, in an interoperable and secure way, between them but also with businesses and citizens.

5.1.3.4 eInvoicing

Electronic invoices have, since 2001, the same legal value as paper formats. The objective of this building block is to focus on the uptake and acceleration of eInvoicing among EU entities.

5.1.3.5 eTranslation

The purpose of the eTranslation building block is to promote the exchange of information between national and European public administrations despite the language barrier by making the Digital Services Infrastructures (DSIs) multilingual.

By building interoperability and mutual recognitions of eAuthentication and eSignature, the CEF building blocks are contributing to the development of cross-border electronic mandates.

6. AS-IS analysis

6.1 Consultation respondents' assessment

The following section of this document deals with describing the AS-IS situation with regards to the electronic powers of representation and mandates in cross-border scenarios for each MS analysed. The information gathered through the received questionnaires was processed and summarised in an executive way by means of a tailored **assessment framework**. Not all of the 14 targeted MS were assessed using this framework due to the scarcity of information found through desk research activities that might lead to imprecise or inaccurate results. Therefore, the responses to the questionnaires were proven to be an indispensable element for the assessment due to the quality and detail of the information.

Following the questionnaire structure, the proposed assessment framework built upon the basis of the ISA Interoperability Maturity Model, revolves around the concept of **dimensions** and **levels**. On the one hand, dimensions are represented by each one of the four EIF Interoperability Layers (Legal, Organisational, Semantic and Technical - LOST), which eases the assessment of the state of play and allows to draw meaningful conclusions from each MS response. Therefore, the assessment framework was designed with the aim of providing insights into the maturity of the national electronic mandate and power of representation state of play of each of the MS included in the study through the LOST layers.

On the other hand, through the different **levels**, it is possible to demonstrate the maturity of the countries' electronic mandate current situation, by assessing the answers across the aforementioned dimensions value according to their maturity. Therefore, the assessment process consisted in assigning a value according to the scale which ranges from 1 to 5, whereby 1 represents the value for least mature, while 5 corresponds to most mature. Moreover, the information provided per dimension could be assessed as well as at an overall level.

6.1.1 Dimensions

As mentioned before, the following four dimensions were considered:

- **Legal:** Evaluates the degree to which legislations are aligned so that exchanged data is accorded proper legal weight across MS.
- **Organisational:** Evaluates the degree to which processes are coordinated which will allow different organisations to achieve a previously agreed and mutually beneficial goal.
- **Semantic:** Evaluates to which degree the precise meaning of exchanged information is preserved and understood by all parties across MS.
- **Technical:** Evaluates the planning of technical issues involved in linking computer systems and services across MS.

6.1.2 Levels

The five elements are presented below.

Initial (1):

- **Legal:** There are no legislations in place governing the legal jurisdiction or legal validity of electronic power of representation and mandates.

- **Organisational:** There is no set organisational structure, thus little or no organisational alignment among organisations across borders.
- **Semantic:** There are no common semantic specifications or vocabularies ensuring mutual understanding among parties.
- **Technical:** There are no technical means in place to carry out and provide required services.

Emerging (2):

- **Legal**: There are legislations emerging for the purpose of governing the legal jurisdiction or legal validity of electronic power of representation and mandates.
- **Organisational**: There is an organisational structure emerging, thus some organisational alignment among organisations.
- **Semantic**: There are common semantic specifications or vocabularies emerging to allow for partial mutual understanding among parties.
- **Technical**: There are technical means emerging to carry out and provide required services.

Applied (3):

- **Legal:** There are legislations (partially) applied for the purpose of governing the legal jurisdiction or legal validity of electronic power of representation and mandates at a MS level.
- **Organisational:** An organisational structure is applied, thus there is organisational alignment among organisations.
- **Semantic:** Common semantic specifications or vocabularies are applied to allow for mutual understanding among parties.
- **Technical:** There are technical means applied to carry out and provide required services.

Managed (4):

- **Legal:** There are legislations in place for the purpose of governing the legal jurisdiction or legal validity of electronic power of representation and mandates at a MS level.
- **Organisational:** The organisational structure is considered to be managed, thus there is substantial organisational alignment among organisations.
- **Semantic:** Common semantic specifications or vocabularies are in place and considered as managed, in turn allowing for substantial mutual understanding among parties.
- **Technical:** There are substantial technical means in place to carry out and provide required services. The technical aspects are considered as managed.

Leading (5):

- **Legal:** There are excellent legislations in place for the purpose of governing the legal jurisdiction and legal validity of activities carried out by the organization at a MS level. The organisation is considered as a leader in the legal dimension.
- **Organisational:** The organisational structure is fully defined, thus there is excellent organisational alignment among organisations. The organisation is considered to be at the forefront of organisational alignment.

- **Semantic:** Common semantic specifications or vocabularies are in place and considered as fully defined, in turn allowing for full mutual understanding among parties. The organisation is considered to be a leader in using and applying semantic specifications.
- **Technical:** All necessary technical means are in place to carry out and provide required services. The organisation's technical aspects are considered exemplary, thus making it a leader in these terms.

6.1.3 Results

For each of the applicable MS the following activities were undergone:

- **Assignment of level per dimension:** Asses their current situation in accordance with all the dimensions established by assigning a level of between 1 and 5.
- **Analysis of the level of maturity per dimension:** Calculate the mean value of the dimensions for each area[17].
- **Analysis of the overall maturity level:** Calculate mean of the values obtained in the previous point to obtain the overall maturity value (level).

In order to have a clear understanding of the assessment framework's results, it is crucial to note that it was primarily designed to assess the MS' responses and convert them into a maturity value in correlation to the EIF LOST interoperability layers. In doing so, the assessed responses were all assigned a value on the 1-5 scale, depending on the content of the responses. The higher the value assigned to the response, the more mature it is considered according to the assessment framework. As an example, a response from the semantic part of the assessment framework could correspond to "There are **no** common standards for the exchange of information". In such an instance, the response would be assigned a "1", as this indicates a low level of maturity. On the other hand, the answer could correspond to "There are **national** common standards for the exchange of information" or "There are **international** common standards in place for the exchange of information". In such instances the first answer would be assigned a "3" representing medium maturity, while the latter would be assigned a "5" representing a high level of maturity.

In doing so, each of the interoperability layers of the responding MS can be assessed, as well as an overall assessment of all the layers combined. Thus in accordance, the results for each responding Member State will demonstrate the assessment's outcome for each of the layers, as well as at an overall level.

The table below presents the results per dimension and per MS:

Dimension	AU	EE	ES	FI	GR	NL	NO	SI	SE	SK
Legal	4.2	3.4	3.4	3.8	1.0	0.0	4.2	3.5	3.4	3.4
Organisational	5.0	2	2.5	4.0	2.5	4.0	3.5	2.0	3.0	2.0
Semantic	3.7	1.6	1.0	2.3	2.3	3.7	1.7	1.0	1.7	3.0
Technical	5.0	5	3.0	5.0	3.0	5.0	3.0	1.0	3.0	3.0

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[17] An area models a common view based upon one or more answers per each level.

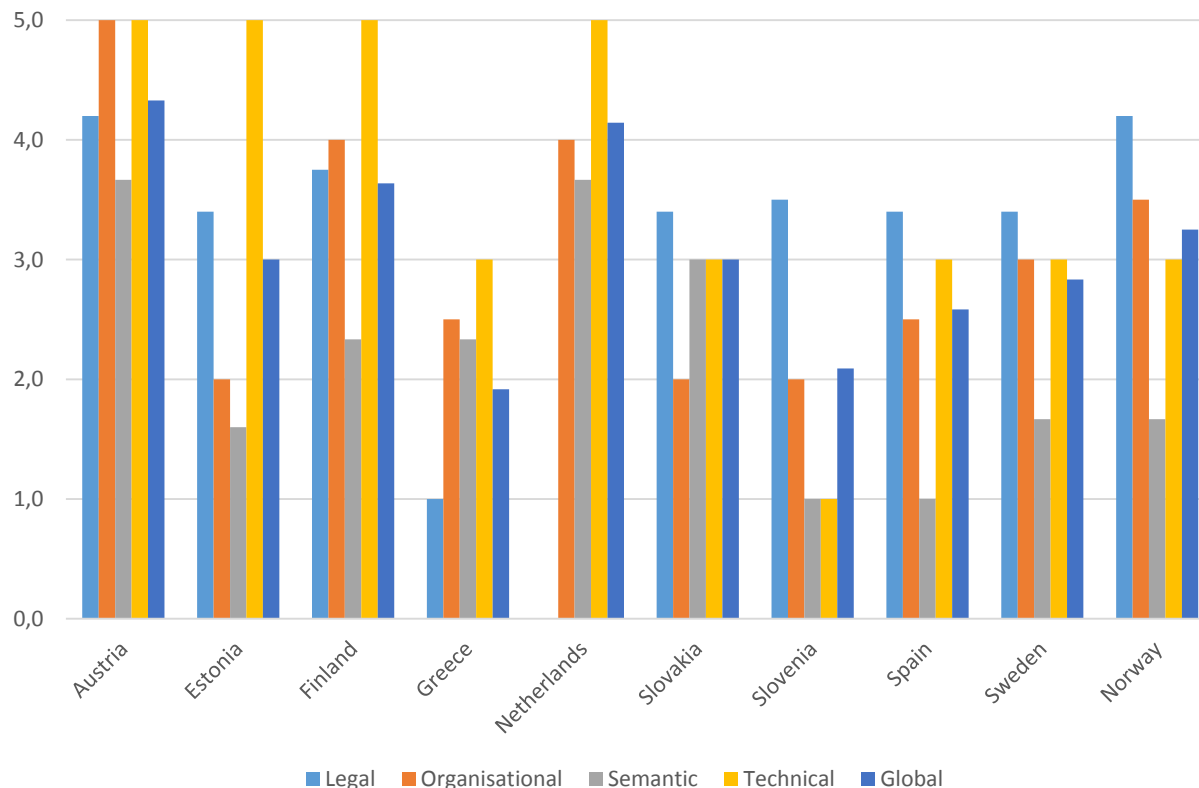| Dimension	AU	EE	ES	FI	GR	NL	NO	SI	SE	SK
Average	4.3	3	2.6	3.6	1.9	4.1	3.3	2.1	2.8	3.0

Table 1 - MS Assessment

Figure 3 - Assessment per MS and dimension

Further detail on the assessment framework can be found in Annex II.

Furthermore, and in addition to the results stemming from the Assessment framework of the AS-IS analysis, complementary information from questionnaires' responses and desk research pertaining to representation powers and mandates are presented below. Principally, these deal with the type and form of powers and mandates among the Member States surveyed, as well as their ability to validly administer electronic representation powers and mandates.

Mandates are used to enable one party to act in the name of another when accomplishing a certain task, service or activity. In doing so, it is important to know who both parties are (Mandator and Mandatee), as well as what the activity is and what it encompasses. Thus, mandate attributes offer a solution to present this mandate information in a universally comprehensible manner within the systems they were created for. So far, the semantic definition of mandates and their attributes has occurred only in a few Member States, and universal mandate attributes at European level have not yet been established. Upon analysis of existing data models and core vocabularies, it has been confirmed that no European Mandate Core Vocabulary exists, however several existing solutions could pave the path towards designing them in an interoperable way. Since the first part of mandates deals with identifying the parties involved, it is clear that identification attributes could be reused in this

case, especially since the parties involved will correspond to either natural or legal persons. In this instance, some attributes from the ISA Core Person[18] and Core Business[19] Vocabularies could serve as an exemplary basis. Further mandate attributes should be designed and defined whilst accounting for the requirements of existing electronic mandate handling systems and attributes implemented at Member States' national levels.

Some MS have tackled this issue (Austria & Netherlands), however their progress in this area is only applicable in their countries at national level. An important development in this regard at the European level has emerged in the form of a STORK2.0 Mandate Data Model, whereby mandate attributes have been defined to function according to the properties of the STORK infrastructure. Nevertheless, a fully acceptable and adequate set of mandate attributes for semantic interoperability in this domain still remains to be defined and set by an internationally binding piece of legislation.

Accordingly, the Commission's "Regulation (EU) 2015/1501 of 8th September 2015 on the interoperability framework pursuant to Article 12(8) of Regulation (EU) 910/2014 for electronic transactions in the internal market"[20] contains the minimum data set for person identification data uniquely representing a natural or legal person. Even though the following represent identification attributes, they are pertinent to representation powers and mandates as these have to be attributable to actors/subjects, therefore the identification attributes stemming from the mentioned regulation are a minimum requisite for mandates' attributes.

Countries	Unilateral vs. Bilateral	Written vs. Oral	Prescribed vs. Free form	Signature (handwritten)	Admissibility of electronic mandates and electronic signatures
Austria	Unilateral	Both	Free	Not mandatory	Both
Belgium		Both, but mostly written		Mandatory for written	Both for written
Czech Republic	Both, but Bilateral for contractual obligations	Both, but mostly written for contractual obligations		Mandatory for written	Both
Estonia		Both, but could be written depending on mandate's purpose			Both
France		Written		Mandatory	Both

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[18] https://joinup.ec.europa.eu/asset/core_person/description

[19] https://joinup.ec.europa.eu/asset/core_business/description

[20] http://publications.europa.eu/en/publication-detail/-/publication/0f9c8d98-56b7-11e5-afbf-01aa75ed71a1/language-en

Germany					
Italy	Unilateral	Written	Prescribed	Mandatory	Both
Lithuania	Unilateral	Written	Prescribed	Mandatory	Both
Luxembourg					Both
Netherlands	Unilateral				Both
Portugal	Both, but Bilateral for contractual obligations	Both, but mostly written for contractual obligations and legal acts	Prescribed for written	Mandatory for written	Both
Slovakia	Unilateral	Written when it is for more than one act	Prescribed for written	Mandatory for written	Both
Slovenia	Both, but bilateral for contractual obligations	Both, but mostly written for contractual obligations and legal acts	Prescribed for written	Mandatory for written	Both
Spain		Written	Prescribed	Mandatory	Both

Table 2 - MS Mandate types

Person	Mandatory	Optional
Natural Person	Current family name(s)	Family and first name(s) at birth
	Current first name(s)	Place of birth
	Date of Birth	Current address
	Cross-border Unique Identifier	Gender

Table 3 – Mandate attributes (natural person)

Person	Mandatory	Optional
Legal Person	Current legal name	Current address
	Cross-border Unique Identifier	VAT registration number
		Tax reference number
		Legal Entity Identifier
		Economic Operator

Person	Mandatory	Optional
		Registration and Identification
		Excise number

Table 4 – Mandate attributes (legal person)

Moreover, as mentioned earlier, Austria and the Netherlands have created their own attributes for electronic representation powers and mandates in their own jurisdictions. These are reflected here by the following, and are further explained in the Targeted assessment and Table 14:

Country	Subject	Person	Attributes
Austria[21]	Mandatee/Representative	Natural Person	First name(s)
			Last name(s)
			Date of Birth
			Unique electronic identifer
	Mandatee/Representative	Legal Person	Full legal name
			Unique electronic identifier

Country	Subject	Person	Attributes
Austria	Mandator/Represented	Natural Person	First name(s)
			Last name(s)
			Date of Birth
			Unique electronic identifier
	Mandator/Represented	Legal Person	Full legal name
			Unique electronic identifier

Table 5 – Natural person and legal person attributes (Austria)

Country	Subject	Attributes
Austria	Mandate Content	Scope of empowerment in

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[21] http://dl.ifip.org/db/conf/i3e/i3e2009/Rossler09a.pdf

Country	Subject	Attributes
		text
		Time constraint
		Collective constraint
		Financial constraint
		Unique serial number
NB: Austrian law prescribes that every electronic mandate has to be electronically signed by the Issuing Registry.		

Table 6 – Mandates attributes (Austria)

Country	Subject	Person	Attributes
Netherlands	Mandatee/Representative	Natural Person[22]	First name(s)
			Last name(s)
			Prefix associated with name
			Date of Birth
	Mandatee/Representative	Legal Person[23]	Current name registered

Country	Person	Mandatory	Optional
Netherlands	Madator/Represented	Natural Person	First name(s)
			Last name(s)
			Prefix associated with name
			Date of Birth
	Mandator/Represented	Legal Person	Current name registered

Table 7 – Natural person and legal person attributes (Netherlands)

Country	Subject	Attributes
Netherlands	Mandate Content	Not retrieved

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[22] https://afsprakenstelsel.etoegang.nl/display/as/Attribuutcatalogus+natuurlijke+personen
[23] https://afsprakenstelsel.etoegang.nl/display/as/Attributencatalogus+niet-natuurlijke+personen

Table 8 – Mandate attributes (Netherlands)

Finally, the Mandate Data Model [24] created for the purposes of the STORK2.0 project correspond to the following:

Project	Subject	Person	Attributes
STORK2.0	**Mandatee/Representative**	**Natural Person**	Given name
			Surname
			Date of Birth
			eIdentifier
	Mandatee/Representative	**Legal Person**	Legal name
			eLPIdentifier
			Legal form
			Text Registered Address
			Canonical Registered Address (Country code Address, state, municipality code, town, postal code, street name, street number, apartment number)
			LP Fiscal number

Table 9 – Mandatee attributes (STORK2.0)

Project	Subject	Person	Attributes
STORK2.0	**Mandator/Represented**	**Natural Person**	Given name
			Surname
			Date of Birth
			eIdentifier
	Mandator/Represented	**Legal Person**	Legal name
			eLPIdentifier

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[24] https://www.eid-stork2.eu/index.php?option=com_phocadownload&view=file&id=66:d49-final-version-of-functional-design&Itemid=174&start=5

Project	Subject	Person	Attributes
			Legal form
			Text Registered Address
			Canonical Registered Address (Country code Address, state, municipality code, town, postal code, street name, street number, apartment number)
			LP Fiscal number

Table 10 – Mandator attributes (STORK2.0)

Project	Subject	
STORK2.0	**Mandate Content**	Time restriction
		Transaction limit restriction
		Is Joint
		Is Chained
		Type of power
		AQAA
		Original mandate
		Original mandate type

Table 11 – Mandate attributes (STORK2.0)

6.2 Targeted assessment

The aim of the following section is to introduce a number of relevant characteristics and specificities regarding Mandates and Powers of Representation from select EU Member States. Ways of authorising others to complete tasks on one's behalf exist in all EU Member States, however their typology and extent of application often differ based on the needs identified and established through their use over time in the country's given context.

The Member States selected for this particular analysis were chosen based on their previous participation and involvement in the earlier phases of this project, as well as their ability to be representative of their neighbouring countries' practices regarding Mandates and Powers of Representation. The similarities could stem not only from similar needs and interactions due to geographic, historical and cultural resemblances, but also from the origin of the countries' Civil Codes which in Europe pertain to Napoleonic, Germanic and Nordic origins. It is in fact the national Civil Codes that most often prescribe the legal elements for Powers of Representation. Additionally, the Maturity Model results have been taken into consideration, thus the choice of countries for analysis also corresponds to those countries having obtained the highest rankings in the assessment. As a result, the countries shortlisted for this part of the study comprise Austria, the Netherlands and Finland.

<table>
<tr><th colspan="2"></th><th colspan="4">European Legal tradition</th></tr>
<tr><th colspan="2"></th><th>Germanic (Civil law)</th><th>Napoleonic (Civil law)</th><th>Nordic (Civil law)</th><th>Common law</th></tr>
<tr><td rowspan="12">European Union</td><td></td><td>Austria</td><td>Belgium</td><td>Denmark</td><td>United Kingdom</td></tr>
<tr><td></td><td>Bulgaria (hybrid)</td><td>Bulgaria (hybrid)</td><td>Finland</td><td>Ireland</td></tr>
<tr><td></td><td>Croatia</td><td>France</td><td>Sweden</td><td>Cyprus</td></tr>
<tr><td></td><td>Czech Republic</td><td>Hungary</td><td></td><td></td></tr>
<tr><td></td><td>Estonia</td><td>Italy</td><td></td><td></td></tr>
<tr><td></td><td>Germany</td><td>Lithuania</td><td></td><td></td></tr>
<tr><td></td><td>Greece</td><td>Luxembourg</td><td></td><td></td></tr>
<tr><td></td><td>Latvia</td><td>Malta</td><td></td><td></td></tr>
<tr><td></td><td>Poland (hybrid)</td><td>Netherlands</td><td></td><td></td></tr>
<tr><td></td><td>Portugal</td><td>Poland (hybrid)</td><td></td><td></td></tr>
<tr><td></td><td>Slovakia</td><td>Romania</td><td></td><td></td></tr>
<tr><td></td><td>Slovenia</td><td>Spain</td><td></td><td></td></tr>
<tr><td rowspan="2">EFTA</td><td>Liechtenstein</td><td></td><td>Iceland</td><td></td></tr>
<tr><td>Switzerland</td><td></td><td>Norway</td><td></td></tr>
</table>

Table 12 – European Legal tradition

Country	Mandate type	Mandate purpose/scope

Country	Mandate type	Mandate purpose/scope
Netherlands	**Definition**	A PoR/mandate is granted for the purpose of completing private affairs, business issues or to perform other judicial acts.
	General	A granted authority for representation that covers all affairs of the principal and all juridical acts, except those that have been unequivocally excluded.
	Special	Granted authority that is limited to a specific act, and thus covers the power to perform only that act. Even if it is granted for the purpose of completing a specific act, it also covers all of the linked administrative acts and potential mandate transfers that may be useful to complete the initial act.
	Limited	Granted authority to cover the power to act on another's behalf for a limited time-frame. As soon as the indicated time-frame has expired, the granted mandate is voided of its validity.
	Irrevocable	The effects of this mandate do not cease upon the death of the principle, nor upon her/his placement under guardianship. It is transferable unless agreed otherwise, and the acts it covers must always be completed in the best interest of the principal.
Austria	**Definition**	A PoR/mandate corresponds to the power to act effectively in the name of another person. It may be granted for the purpose of completing private affairs, business issues or to perform other judicial acts.
	General	It encompasses the Mandatee's authorisation to conclude all actions that may be subject to representation.
	Generic	This mandate authorises the Mandatee to conclude all actions of a specific type, or within a certain financial value.
	Single	This mandate only authorises the Mandatee to conclude a single, specific action. When creating this type of mandate, the Mandator should take care to ensure that it is limited in time.
	Precautionary	In this type of mandate, a representative is appointed in the case of loss of the decision-making capacity of the principal. A medical certificate must be obtained to determine the extent of the loss of the Mandator's mental

Country	Mandate type	Mandate purpose/scope
		capacity.
Finland	**Definition**	A PoR/mandate is a legal act by which the principal legal capacity, i.e. the Mandator, authorises the Mandatee/representative, to conclude actions and/or transactions with a third person.
	Open	It is a 'carte blanche' authorisation which allows the Mandatee to conclude all actions required in the name of the Mandator/principal. It is the most inclusive and is often given to professional Mandatees/representatives (e.g. lawyer or accountant to act in the name of the Manadator) for the treatment of administrative matters.
	General	The General mandate enables the Mandatee/representative to not only conclude the primary action, but also to conclude any other actions that may be necessary to accomplish the primary one.
	Identified	It is used to conclude precisely defined actions on behalf of the Mandator. Both the Mandatee and the object of the mandate must be clearly denoted and defined.
	Continuing	In this mandate, a representative is appointed in the case of loss of the decision-making capacity of the principal. The Continuing mandate ceases to be valid when the authorisation is withdrawn, when the Mandator dies or when notice of Mandatee's resignation is presented.

Table 13 – Mandate types

Additionally, there may be several requirements to be fulfilled for a mandate to be valid and usable by the Mandatee. One such requirement pertains to the need of an authority to validate the mandate before it can become effective. As a common rule across the three analysed countries, it has been identified that validation by a notary is required when the object of the mandate are actions related to immovable property, i.e. sale, rent, gifting, etc.

Another requirement for the mandate to become effective could be the explicit acceptance of the mandate by the Mandatee. In the instance of electronic mandates in the Netherlands, Austria and Finland there is no need for the Mandatee to explicitly accept the mandate, except in the instance of the Irrevocable, Precautionary and Continuing PoRs in the three respective countries.

The following table summarises our understanding of the different types of Powers of Representation across the countries analysed herein, as well as their minimum required mandate attributes.

Country	Netherlands				Austria				Finland			
Mandate types	General	Special	Limited	Irrevocable	General	Generic	Single	Precautionary	Open	General	Identified	Continuing
Minimum required mandate attributes for citizens												
First name(s)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Last name(s)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unique electronic identifier					✓	✓	✓	✓				
Prefix associated with name	✓	✓	✓	✓								
Date of birth	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scope of empowerment	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Object of empowerment		✓					✓			✓	✓	
Type of object						✓						
Time constraint (starting date and expiring date)			✓				✓				✓	
Financial constraint						✓					✓	
Social security number									✓	✓	✓	✓
Minimum required mandate attributes for legal												
Current registered name	✓	✓	✓						✓	✓	✓	
Full legal name					✓	✓	✓					
Unique electronic identifier					✓	✓	✓		✓	✓	✓	

Table 14 – Minimum required mandate attributes[25]

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[25] Table readability legend: A ✓ represents a mandatory attribute in the given country. A blank space represents an optional attribute that may be added to the mandate if deemed necessary. The addition of the optional attributes is possible due to the open nature of the mandates in the countries analysed.

The Dutch Civil Code finds its legal origins in the Napoleonic codifications of civil law, and could thus be exemplary to draw on similar issues in other countries (e.g. France, Italy, Spain, Belgium, Luxembourg, Romania, etc.) whose Civil Codes also find their roots in the Napoleonic codification.

In the Netherlands, a Power of Representation is a written authorisation for one person to represent and act on another person's behalf. It may be granted for the purpose of completing private affairs, business issues or to perform other judicial acts. A juridical act in Dutch civil law signifies a legal act or expression of will intended to have legal consequences, and can be created on the basis of certain competences, such as the competence to contract or the competence to alienate own goods, thus a sale contract is viewed as a juridical act. In some such instances, especially when authorising a Mandatee to sell **immovable property**, the validation of the PoR by an authority (e.g. notary) may be required. There exist several types of Powers of Representation in the Netherlands, including the **General PoR**, **Special PoR** and **Limited PoR**. The **General PoR** is a granted authority for representation that covers all affairs of the principal and all juridical acts, except those that have been unequivocally excluded. The **Special PoR** is limited to a specific act, and thus covers the power to perform only that act. Nevertheless, a PoR granted for the purpose of completing a specific act also covers all of the linked administrative acts and potential transfers of PoR that may be useful to complete the initial act. A **Limited PoR** is only granted to cover the power to act on another's behalf for a limited time-frame. As soon as the indicated time-frame has expired, the granted PoR is voided of its validity. In the Netherlands, even if a person does not have the capacity to perform juridical acts for herself/himself, does not make her/him incapable of acting as a representative for another person. Additionally, an act performed by a representative based on a PoR granted by a person without capacity to perform juridical acts will be valid, null, void or voidable as it would have been if the principal had concluded the act himself. Furthermore, when using electronic PoR services for citizens in the Netherlands, the details of the mandate pertaining to its scope and object are entered in free text and the Mandatee/representative does not need to sign or confirm the received mandate.

Moreover, it is worth noting that in general, PoRs in the Netherlands do not extend to acts of disposition, i.e. they may not be transferred, unless this is unequivocally provided for in the PoR. Some exceptions may apply, thus the representative may transfer the received PoR only:

- to the extent that the transfer is a necessary consequence of the juridical acts to be performed;
- to the extent that the transfer is necessary in the interest of the principal who is unable to act himself;
- to the extent that the PoR concerns assets located outside the country in which the current representative is residing.

Furthermore, a PoR in the Netherlands may be granted to two or more persons jointly, where each is empowered to act individually, unless provided otherwise.

A Power of Representation in the Netherlands ceases to produce effects under the following circumstances:

- upon the death of the principal;
- upon the principle being placed under adult guardianship;
- upon principle's bankruptcy;
- upon revocation of the PoR by the principle;
- upon renunciation of the PoR by the representative;

- and upon representative's completion of all requested duties.

Some exceptions may apply, in particular upon the principal's death. In such instances, the representative remains empowered to perform juridical acts a) that are necessary for the management of a business, as well as b) those which cannot be delayed without causing damage, even upon the death of the principal. Nevertheless, it must be noted that if the PoR remains valid upon death as in the mentioned instances, it only remains as such for one year from the moment the principal is deemed incapable.

Moreover, the Netherlands has an additional type of PoR which is irrevocable, signifying that its effects do not cease upon the death of the principle, nor upon her/his placement under guardianship. The irrevocable PoR is subject to different stipulations when compared to the other PoRs, as it is transferable unless agreed otherwise, and the acts it covers must always be completed in the best interest of the principal.

Additional mandate attributes that could be extracted from Dutch Powers of Representation for the purpose of developing a European set of mandate attributes could correspond to the following:

Mandator has capacity to perform juridical acts: Y/N
Mandatee has capacity to perform juridical acts: Y/N
PoR type: General, Special, Limited
Irrevocable mandate: Y/N
Number of Mandatees > 1: Y/N
If number of Mandatees > 1, act jointly: Y/N

Table 15 – Mandate attributes (Netherlands)

As a country at the forefront of using and handling electronic Mandates and Powers of Representation, the Netherlands has enabled its citizens and businesses to manage such authorisations digitally. Citizens may do so by using the DigiD platform accessible via https://machtigen.digid.nl/LOGIN?0, whilst the same is available for businesses and organisations through the eHerkenning platform, accessible via https://www.eherkenning.nl/. Once created, the PoRs may be used via the Citizen's Card.

In order for citizens to be able to use DigiD Machtigen, they must first register to receive the required credentials. When registering, the citizen is requested to provide her/his citizen service number (BSN), date of birth, postal code and a username. Once this is done, the password to the citizen's DigiD account is sent via post, in turn allowing the citizen to login to the system safely. Once the citizen starts using the system, she/he can create and revoke PoRs, assign them to one or multiple representatives, choose the particular type of PoR to be utilised.

eHerkenning, meaning eRecognition, is essentially the DigiD for businesses and organisations. It enables access to a number of services, including the ability to create PoRs in the name of an organisation. An important difference is that DigD is provided by the government while eHerkenning is provided by commercial companies. In this instance, the organisations using eHerkenning may choose amongst 6

commercial providers who differ from each other on the basis of SLAs, prices, additional services, support, etc.

The Austrian Civil Code (Allgemeines bürgerliches Gesetzbuch) finds its legal origins in the Germanic codifications of civil law, and could thus be exemplary to draw on similar issues in other countries (e.g. Germany, Switzerland, Latvia, Croatia, Hungary, etc.) whose Civil Codes also find their roots in the Germanisitic codification.

In Austria, a Power of Representation corresponds to the power to act effectively in the name of another person. It may be granted for the purpose of completing private affairs, business issues or to perform other judicial acts. The Powers of Representation in Austria exist in several forms, which in turn serve different purposes. The **Generalvollmacht or General PoR** encompasses a Mandatee's authorisation to conclude all actions that may be subject to representation, e.g. Mandator empowers Mandatee to manage her/his bank accounts, submit her/his taxes, open a business, etc. Furthermore, when issuing a General PoR, it is advisable to specify the exact designation of the powers of the Mandatee, as the extent of the representation is then determined by the extent described in the PoR. In the instance of a **Gattungsvollmacht or Generic PoR**, the Mandatee is authorised to conclude all actions of a specific type, or within a certain value, e.g. Mandator empowers Mandatee to manage all her bank accounts (in Bank A, B, C, etc.) or to conclude transactions that do not exceed XXX euros. Whilst in the case of the **Einzelvollmacht or Single PoR**, the Mandatee is only authorised to conclude a specific action, e.g. Mandator empowers Mandatee to manage her/his account in Bank A. Additionally, where authorisations are granted for a specific purpose, the Mandator should take care to ensure that these are limited in time. Furthermore, when using electronic PoR services for citizens in Austria, the details of the mandate pertaining to its scope and object are entered in free text and the Mandatee/representative does not need to sign or confirm the received mandate.

With regards to acts of disposition of the PoR, i.e. transfer of PoR from one Mandatee to another, they are allowed. Nevertheless, this is only the case when disposition/transfer is expressly provided for in the PoR or if it is considered inevitable due to surrounding circumstances (e.g. impossibility for Mandatee to conclude business). Moreover, there exists also the possibility to empower several persons at once. In such cases, if some of these have been given express full authority to act upon a certain matter, they may do so. However, in the case where none of the Mandatees have been granted full authority, the chosen representatives must act jointly and unanimously.

A Power of Representation may be freely revoked by the Mandator/principal at any given moment, however in doing so she/he might give rise to additional actions. Such actions may take the form of compensation for losses incurred by the Mandatee/representative in the meantime, as well as losses suffered otherwise. Accordingly the PoR in Austria ceases to produce effects in the occurrence of the following:

- Death of Mandator/principal;
- Death of Mandatee/representative;
- Declaration of insolvency by the Mandator/principal;
- Revocation of PoR by Mandator/principal;
- Completion of the requested duties.

Nevertheless, several exceptions exist where the effects of the PoR do not cease even when one or more of the previously mentioned reasons occur. If for example, the Mandator dies but the termination of the PoR would cause negative effects for her/his heirs, the heirs themselves are considered to replace the Mandator, thus allowing the existing Mandatee/representative to remain authorised to perform and complete the already stipulated actions in the name of the

Mandator(s). As a general rule in Austria, obligations stemming from a PoR may continue even after revocation, if the matter at hand cannot be delayed, as it would cause additional damages and suffering to the Mandator/principal.

Additionally, a person may create a **Vorsorgevollmacht or Precautionary/Enduring PoR** whereby a representative is appointed in the case of loss of the decision-making capacity of the principal (e.g. accident, Alzheimer's, etc.). Moreover, to validly confirm that one has indeed lost her/his decision-making capacity, a medical certificate must be obtained to determine the extent of the loss. As a general rule in Austria, a person may create a PoR if they are of legal age and possess mental capacity, the same also applies to the person taking the responsibility to perform the PoR upon herself/himself. Furthermore, in the event that a Precautionary PoR has not been created, yet the person concerned has lost her/his ability to act in her/his own name, a guardian or administrator may be appointed to them, however it must be ensured that this newly appointed guardian is not in blood relation to the incapacitated individual, as well as that no conflicts of interest exist or arise from this relationship.

Additional mandate attributes that could be extracted from Austrian Powers of Representation for the purpose of developing a European set of mandate attributes could correspond to the following:

Mandator is of legal age: Y/N
Mandator has capacity to perform juridical acts: Y/N
Mandatee is of legal age: Y/N
Mandatee has capacity to perform juridical acts: Y/N
Number of Mandatees > 1: Y/N
If number of Mandatees > 1, act jointly: Y/N
Transferable: Y/N
PoR type: General, Generic, Single
Precautionary/Enduring PoR: Y/N
Names of heirs: Text

Table 16 – Mandate attributes (Austria)

As a country at the forefront of using and handling electronic Mandates and Powers of Representation, Austria has enabled its citizens and businesses to manage such Powers of Representation digitally. Citizens may do so by using the Stammzahlenregister or SourcePIN Registry accessible via https://mms.stammzahlenregister.gv.at/mms/moaid.do, while PoRs and ad hoc Mandates between legal persons are managed through UPS https://www.usp.gv.at/uspLoginDAS/loginform, and stored in their respective constitutive registers, i.e. Legal Persons' Registry. Other legal mandates backed by administrative acts are managed in the respective constitutive registers (company register, etc.).

The Powers of Representation service in Austria allows for the electronic handling of PoRs between natural and legal persons. Furthermore, it enables users to see the history of all their Powers of Representation used in e-government procedures.

The registration with the Power of Representation service is done via the citizen's card, as is the later usage of the PoRs.

Legal persons in Austria may use the USP Portal to access an array of services provided by the public administration. One such service includes the handling of electronic Powers of Representation for ad hoc mandates. In order to start using the offered services, legal persons must first register through the portal.

The Finnish Civil Code finds its legal origins in the Nordic legal tradition and codification of civil law, and could thus be exemplary to draw on similar issues in other countries (e.g. Denmark, Sweden, Norway and Iceland) whose Civil Codes also find their roots in the Nordic codification.

In Finland, a Power of Representation is a legal act by which the principal legal capacity, i.e. the Mandator, authorises the Mandatee/representative, to conclude actions and/or transactions with a third person. The main types of Powers of Representation existing in Finland are the **Open PoR**, **General PoR** and **Identified PoR**. A special exception is the **real estate sales authorisation**, which must be concluded separately from the previously mentioned PoRs, as alienation of immovable property by a person other than the owner adheres to a distinct set of rules. One such rule implies that any authorisation for sale of real estate must be in written form and should be submitted to the local Register Office. The **Open PoR** is the most inclusive and is often given to professional Mandatees/representatives (e.g. lawyer or accountant to act in the name of the Manadator) for the treatment of administrative matters. Essentially, the Open PoR is a 'carte blanche' authorisation which allows the Mandatee to conclude all actions required in the name of the Mandator/principal. In turn, the **General PoR** is mostly used to accomplish a given action (e.g. apply for passport renewal), however more secondary actions may be required (e.g. acquire birth certificate, acquire proof of nationality documentation, etc.) to conclude the primary action. Thus, the General PoR enables the Mandatee/representative to not only conclude the primary action, but also to conclude any other actions that may be necessary to accomplish the primary one. The **Identified PoR** is used in Finland to conclude precisely defined actions on behalf of the Mandator. In doing so, the Mandator will fill in the Mandatee's/representative's first and last name, date of birth or social security number, as well as the specific object of the PoR. Additional constraints to the PoR, such as value limit or time limit may be added to the PoR to make them more complete and ensure that the Mandatee does not act outside of their authorised scope. Furthermore, in order to be able to enter into PoR, both the Mandator and Mandatee must be of legal age and possess the mental capacity to do so, nevertheless some exceptions to this rule (e.g. Continuing PoR) exist. If for example the Mandator has lost her/his capacity to act, the action carried out by the Mandatee in this case will render the same results as if it had been carried out by the Mandator herself/himself. Additionally, when using electronic PoR services for citizens in Finland, the details of the mandate pertaining to its scope and object are entered in free text.

In Finland it is generally accepted that PoRs are personal, thus once the mandate is given to a specific person, no other can function under that authorisation, i.e. non-transferable. Nevertheless, an exception to this rule exists, thus the Mandatee/representative may transfer the PoR only if transfer by the Mandatee/representative is explicitly mentioned in the initial PoR or if the Mandator/principal agrees with the delegation. An exemplary reason for why such provisions exist in Finland can be found in the following example, whereby a lawyer cannot pass on his mandate to a colleague, as the basis of the assignment is considered to be the personal characteristics of that lawyer, such as her/his experience and personal traits.

The Mandator is free to revoke a PoR at any given moment he deems this to be necessary, however several steps must be accounted for in order to ensure that the revocation of the PoR was in fact effective. In principle, the general rule is that a PoR revocation must be done and communicate in the same way as it was created. To exemplify, if the Mandator informed the Mandatee of the PoR by directly communicating it to him, the revocation should be done in the same manner. The same applies if the PoR was communicated to the Mandatee via a public channel such as newspapers, the Mandator may revoke the PoR by publishing this information through the same channel. Furthermore, it is interesting to note that in Finland a PoR's validity does not end with the death of the Mandator/principal, unless special circumstances require its revocation. Thus, a PoR ceases its effects in the instance of:

- revocation of the PoR by the Mandator
- bankruptcy of the Mandator/principal
- declaration of void PoR by the Mandator
- forbidding the Mandatee to act on PoR by the Mandator
- loss of employment of an employee whose PoR is linked to his title/position.

Nevertheless, several exceptions exist where the effects of the PoR do not cease even when one or more of the previously mentioned reasons occur. If the Mandator did not properly inform the Mandatee of the revocation, or if he did but the notice of revocation did not reach the Mandatee, then the actions effectuated by the Mandatee, even after the revocation, will be legally binding.

Additionally, a person may create a **Continuing PoR,** whereby a representative is appointed in the case of loss of the decision-making capacity of the principal (e.g. accident, Alzheimer's, etc.). This type of PoR is created and granted in a similar way to creating a will. In such an instance, the Mandator appoints a Mandatee, who will have to agree to this authorisation, and defines the scope. In the Continuing PoR, the scope may include handling property matters, financial matters, as well as personal and healthcare matters. Additional requirements when creating a Continuing PoR include having at least two witnesses who are not of blood relation to the Mandator, present at the signing. The PoR will thus become valid when the Mandator loses her/his decision-making capabilities, once a medical certificate confirming this state is presented. The Continuing PoR ceases to be valid when the authorisation is withdrawn, when the Mandator dies or when notice of Mandatee's resignation is presented.

Additional mandate attributes that could be extracted from Finnish Powers of Representation for the purpose of developing a European set of mandate attributes could correspond to the following:

Mandator is of legal age: Y/N
Mandator has capacity to perform juridical acts: Y/N
Mandatee is of legal age: Y/N
Mandatee has capacity to perform juridical acts: Y/N
Transferable: Y/N
PoR type: Open, General, Identified
Continuing PoR: Y/N
Employee title/position: Text

Table 17 – Mandate attributes (Finland)

A cutting-edge digitalised Finland has enabled its citizens and businesses to use and handle electronic Mandates and Powers of Representation. Both, citizens and businesses may do so by using the logging into Suomi.fi with their respective credentials. Once at the login page, https://lomake.fi/b/ec/lomakepalvelu/do_register?s=QqiZi@22KB0rTkP&_lang=en&authority_abr=MAIST&virasto=Local%20register%20offices, citizens may access PoR services using their online banking codes, while legal persons are required to use their KatsoID, credentials which are furnished by the Finnish tax authority.

The Powers of Representation service in Finland allows for the electronic handling of PoRs between natural and legal persons, as well as among legal persons. Furthermore, it enables users to see the history of all their Powers of Representation used in e-government procedures.

As may be concluded from the preceding text and tables, it is evident that despite having analysed three different European countries whose civil codes stem from different legal traditions, a number of similarities exist among European Powers of Representation. The most obvious commonality is the resembling typology of PoRs in terms of General and Single PoRs, as well as the Enduring PoR, which may be created as a future safeguard from incapacity in decision-making capabilities. Furthermore, the minimum required identification attributes are very close to each other's, across both countries and types of mandates. It thus stems that despite the differences and divergences in the development of each country's mandate system in Europe, it could be feasible to extrapolate their similarities to create a European mandate system with universal requirements and attributes, which would in turn enable the seamless provision of mandate services within the Digital Single Market.

7. Business cases

The following section serves to describe the approach needed to create and use an electronic mandate and power of representation in a cross-border scenario. In order to ensure that the chosen scenarios result in relevant findings, several factors such as frequency of service usage, country-specific service usage prioritisation and potential mandates' generation needs among others, have been taken into account during this study. More details with regards to the above mentioned activities can be found in the previous chapters of this document.

Throughout the analysis of the responses obtained through a questionnaire answered by relevant MS and involved stakeholders, as well as extensive desk research with regards to the subject matter of electronic mandates and powers of representation, it has been concluded that there is currently scarce homogeneity among the steps and processes involved in creating and using electronic powers of representation in cross-border situations. Furthermore, despite the progress made in cross-border electronic mandate issuing and usage through Large Scale Pilots, such as in STORK 2.0 and e-SENS projects, still the majority of MS have not successfully implemented such mechanisms and therefore lack detailed specifications with regards to the actual functioning of such systems. It is precisely for this reason that the chosen approach to demonstrate the overall processes and flows of events is based upon a **conceptual framework** and scenarios. In doing so, the information retrieved from the relevant stakeholders serves as the principal basis for developing the scenarios, however as mentioned earlier, the scarcity of such detailed information does not permit for the AS-IS description of a cross-border electronic mandate scenario involving concrete countries. As a result, the conceptual framework involves describing a cross-border electronic mandate scenario between countries A and B, including the description of involved actors based on their duties and role in the conceptual framework through business cases rather than their actual name and details. Additionally, it is worth pointing out that the conceptual framework was derived from a logical flow of processes and from the practices of the few MS that have an electronic mandate system in place. They differ somewhat from each other, thus the conceptual framework was designed to encompass their solutions, all whilst accounting for cross-border needs and ease of implementation for countries that do not yet have such a system in place. One of the essential preconditions is that both countries involved in the Business Cases have an Attribute Transmission Node in place in order to enable the sending and receipt of attributes from one country to another. In turn, this ensures safe data transmission in the same machine readable format, thus enabling a steady and uninterrupted cross-border flow of identity and mandate attributes from one country's system to the other's.

Moreover, the chosen business cases, other than being aligned with information coming from the relevant MS, are also considered to be exemplary for all four of the possible representation relation scenarios, N-N, L-N, N-L and L-L. The chosen business cases correspond to *Opening a business cross-border*, *Submitting a tender for public procurement cross-border*, *Opening a bank account cross-border*, *Submitting a corporate tax declaration cross-border*, and finally *Accessing patient summary cross-border* along with an initial business case conveying the *Mandate Creation*. Each business case will be accompanied by a set of generic use cases that will be tailored according to its specificities.

The first business case, corresponding to the *Mandate Creation*, is considered as the starting point for all of the following business cases, except for the third one on Submitting a tender for public procurement. It includes preconditions to be applicable for the remainder of the business cases, especially as it contains factors relevant and necessary to serve both legal and natural persons. Furthermore, in the case of one person giving mandates to another, the first step implies creating the mandate. It is therefore during this step that the first difference among mandates becomes evident, as it is at this point that the mandate will be

distinguishable based on the actions required by the Mandator and/or Mandatee. Depending on the actions, the mandate may be classified as either unilateral or bilateral. A unilateral mandate requires only the approval of the creator of the mandate, i.e. Mandator. On the other hand, a bilateral mandate, along with requiring the approval of the Mandator, also necessitates the approval/acceptance of the mandate by its recipient, i.e. the Mandatee. Whether mandates should be created unilaterally or bilaterally, especially when using electronic systems for the procedure, is a requirement often prescribed by the legislation of the country where it is initially created. Therefore, upon analysis of information pertaining to the existing national mandate management systems, in particular responses provided by participating Member States, it has been found that the majority have in place means to create unilateral mandates.The second business case of *Opening a business cross-border* serves to demonstrate the relationship between two natural persons, whereby one natural person from one country delegates another natural person from another country to open a business in that country or a third one. Furthermore, the mentioned business case implies a C2A relationship, in turn meaning that citizens are requesting a service from the public administration.

The third business case of *Submitting a tender for public procurement cross-border* serves to demonstrate the relationship between a legal person and a natural person, whereby a legal person from one country intrinsically delegates a natural person to submit a tender for public procurement in that country or a third one. Furthermore, the mentioned business case implies a B2A relationship, in turn meaning that a business is requesting a service from the public administration.

The fourth business case of *Managing a bank account cross-border* serves to demonstrate the relationship between a natural person and a legal person, whereby a natural person from one country delegates a legal person from another country to open a bank account in that country or a third one. Furthermore, the mentioned business case implies a C2B relationship, in turn meaning that a citizen is requesting a service from a business.

The fifth business case of *Submitting a corporate tax declaration cross-border* serves to demonstrate the relationship between two legal persons, whereby a legal person from one country delegates a legal person from another country to submit a corporate tax declaration in that country or a third one. Furthermore, the mentioned business case implies a B2B relationship, in turn meaning that a business is requesting a service from another business. In addition and as an initial Business Case, a cross-border mandate creation is initially described.

In addition, a sixth business case was created in order to better serve the purposes of the Digital Single Market, especially in the domain of European Health. Thus, it was deemed relevant and necessary to include a business case displaying *cross-border access to patient summaries*, i.e. by a health professional in a country different to that of the patient's origin.

Furthermore, another important point to be mentioned is the Service Provider, which undertakes a crucial role in each business case. In essence, the Service Provider corresponds to the body providing the service to the initiator of the request, who can be either the Mandator or Mandatee depending on the business case. More specifically, in the Business Case referring to mandate creation, the initiator will be the Mandator, while in the mandate usage business cases, the initiator is the Mandatee. It is important to note that as different services may be requested, the Service Providers will also be different. Bearing this in mind, it then corresponds that the Service Provider in Business Case 1 is the Mandate Issuing Service, in Business Case 2 it is the Business Registry, in Business Case 3 it is the body requiring public procurement, in Business Case 4 it is the relevant bank, and finally in Business Case 5 the

Service Provider is the relevant tax authority, while in Business Case 6 it is the relevant health authority.

Finally, this section aims to provide additional clarification with regards to the business cases, and especially the reasons behind storing mandates in registries linked to constitutive registers such as the Natural Persons' Registry or Legal Persons' Registry. To be clear and concise, the principal reason for linking the Natural Persons' Registry and Natural Persons' Mandate Registry is to ensure that mandates stored in the latter registry are directly linked with the authoritative data pertaining to the mandate subject in the constitutive database. The same applies for the instances in the business cases where the Legal Persons' Mandate Registry is linked with the Legal Persons' Registry.

The table below defines the actors involved in the mentioned Business Cases:

Actors	Definitions
Mandator	Person who needs an activity executed in his name; Creator of the mandate.
Mandatee	Person who executes an activity in the name of the mandator; User of the mandate.
Health Professional	Person who provides healthcare services. The healthcare professional must be registered with the health authority belonging to the country in order to identify her or him unequivocally.
Service Provider	Provides service to the request initiator.
National electronic Identity Provider	Body charged with identity authentication in its respective country.
Attribute Transmission Node	System component charged with transmitting attributes from sender to recipient. It acts as an authentication gateway for service providers authenticating users from different countries using their national identity attributes.
Trusted Querying Service	Body charged with querying the authoritative databases on the basis of received attributes.
Natural Persons' Registry	Authoritative registry containing authentic natural persons' data in its respective country.
Natural Persons' Mandate Registry	Authoritative registry containing authentic natural persons' mandate data in its respective country.
Legal Persons' Registry	Authoritative registry containing authentic legal persons' data in its respective country.
Legal Persons' Mandate Registry	Authoritative registry containing authentic

Actors	Definitions
	legal persons' mandate data in its respective country.
Health Professional Registry	Authoritative registry containing health professionals'/practitioners' data in its respective country. Those registered can practice and provide services only within the scope of their registration.

Table 18 – Business Cases actors

Additionally, a number of security features are denoted in continuation. Considering the fact that the framework and models defined throughout this document are mostly conceptual, it has proven difficult to provide concrete security measures. Nevertheless, knowing the type of interactions and data which are required whilst using electronic representation powers and mandates, it is feasible to provide general security considerations and recommendations which address at least part of the security needs for electronic representation powers and mandates, as well as their respective usage systems. Therefore, the security considerations in this instance as such are concerned with the security of data and identity, along with physical and operational system security.

With regards to data security, the main considerations revolve around several data security concepts, such as **confidentiality**, **integrity**, **availability** and **exclusivity**.

Confidentiality in this case has to do with keeping private data private, and allowing the data subject to decide when and on what terms its attributes may be revealed. This instance is mostly regulated by data protection policies of the state in which the data is kept, which in turn gives way to variations for keeping private data private, as well as differences in the penalties which arise in the occurrence of a confidentiality breach. Nevertheless, with the new European Regulation (EU) 2016/679[26] and Directive (EU) 2016/680[27] on data protection which are to be applied and transposed by May 2018, the aim is to provide a more unified European approach towards protecting European citizens' data privacy rights.

Data ***integrity*** has as its principal concern the assurance that the data available is in fact correct data. Correctness of data implies the application of the correct data format and the provision of the correct data value. Furthermore, the data presented must be complete, i.e. not lacking any elements or being partial. Finally, data integrity calls for data validity, which means that the data provided must be valid at the moment of its provision. Valid data corresponds to the latest data available on a given subject, which thus entails that such previous data entries would be considered as invalid data.

Data ***availability*** pertains to making data available at the moment that it is required, as well as ensuring that systems enabling data provision are running and accessible at any moment that the data is needed.

In order for entities/users to produce and use electronic mandates, they will need to identify themselves and be authenticated by the respective identity providers. In doing so, the entities will need to present identification credentials/information, which represents personal data. It is

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[26] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.119.01.0001.01.ENG&toc=OJ:L:2016:119:TOC
[27] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.119.01.0089.01.ENG&toc=OJ:L:2016:119:TOC

therefore crucial to ensure that ***entities may identify themselves in a safe manner***, without fear of their information being corrupt or abused. There are numerous ways to improve identity protection, and some of these correspond to using electronic signatures, end-to-end encryption, minimum data transmission (transmitting only required and relevant data) and credential to user validity cross-check.

Moreover, as several ways of protecting the digital aspect of data has been presented above, it is also necessary to mention the **physical aspect of data**, or at least its physical storage aspects. Physical security in this regard has to do with preventing any unauthorised physical disturbances to the location and information held for the purpose electronic mandates. Such security may be achieved by securitising the actual location where the data is stored, securitising physical access and in doing so, protecting against external threats. Additionally, the equipment and hardware required and used for the purpose of electronic mandates must be regularly maintained and kept safe from damage in order to prevent service discontinuance and prevent data loss.

Finally, additional steps and procedures can be implemented to further ensure the mitigation of potential data vulnerabilities and risks. These correspond to the use of clear policies, standards and procedures for early risk or threat detection and mitigation. A security policy would outline rules and procedures to be undertaken and enforced in order to keep the system as secure as possible. Such policies should be amended to address new threats or weaknesses in the case of their occurrence and detection. Standards such as ISO 27000 and ISO 27001 addressing information security and information security management systems should also be considered, as they reassure that security is kept at a universally recognised level.

7.1 Business Case 1: Cross-border Mandate creation approach

In the event of accessing and executing services abroad, an entity (natural or legal person) from country A might want to delegate the activity to an entity (natural or legal person) in country B where he/she wants to make use of a service. In such an instance, the entity from country A may be able to authorise another entity from country B to carry out the service in the name of the entity from country A. For the sake of simplifying the nomenclature of actors, the entity from country A is referred to as the **mandator** and the person executing the service in the name of the mandator, i.e. the entity from country B, is the **mandatee**.

It should be notted that for practical reasons representatives of just two countries, A and B, are involved. However the conceptual framework can be easily extended to encompasse more complex scenarios, e.g. involving a third country, where an entity from country A may be able to authorise another entity from country B to carry out the service in the name of the entity from country A in country C.

Due to the fact that most of the countries responding to the questionnaire have specified that there are means in place for unilateral representation, which is also the most commonly used form of representation according to the survey launched, the conceptual mandate creation scenario described also corresponds to unilateral mandate creation. In essence, this procedure is initiated by the mandator who enters the Service Provider application for the purpose of creating an electronic mandate and power of representation for use in a cross-border scenario. In doing so, the mandator will have to identify himself and be authenticated via the country's National electronic Identity Provider.

Once the mandator's identity has been authenticated by the National electronic Identity Provider of his/her originating country, he/she will be prompted to enter the attributes of the mandate, including its objective, timely and financial constraints as well as the details of the person he/she is appointing to act on his/her behalf, i.e. the mandatee. Upon this step, the back-end process involves checking the relevance and validity of the mandate attributes, along with the identity of the mandatee. Bearing in mind that a cross-border scenario is being described, it is implied that the mandatee is from a country which is different from that of the mandator. Therefore, when verifying the mandatee's identity, it is the Natural Persons' or Legal Persons' Registry of the mandatee's country of origin which is queried, in turn guaranteeing valid identification of the mandatee.

As soon as the mandate attributes' validity are confirmed, the system approves the creation of the mandate. Once approved, the mandate attributes are returned to the mandator country's system, where the mandate is further assembled with the appropriate attributes and stored in the relevant Trusted Authority of the mandator's country, i.e. the Natural Persons' or Legal Persons' Mandate Registry.
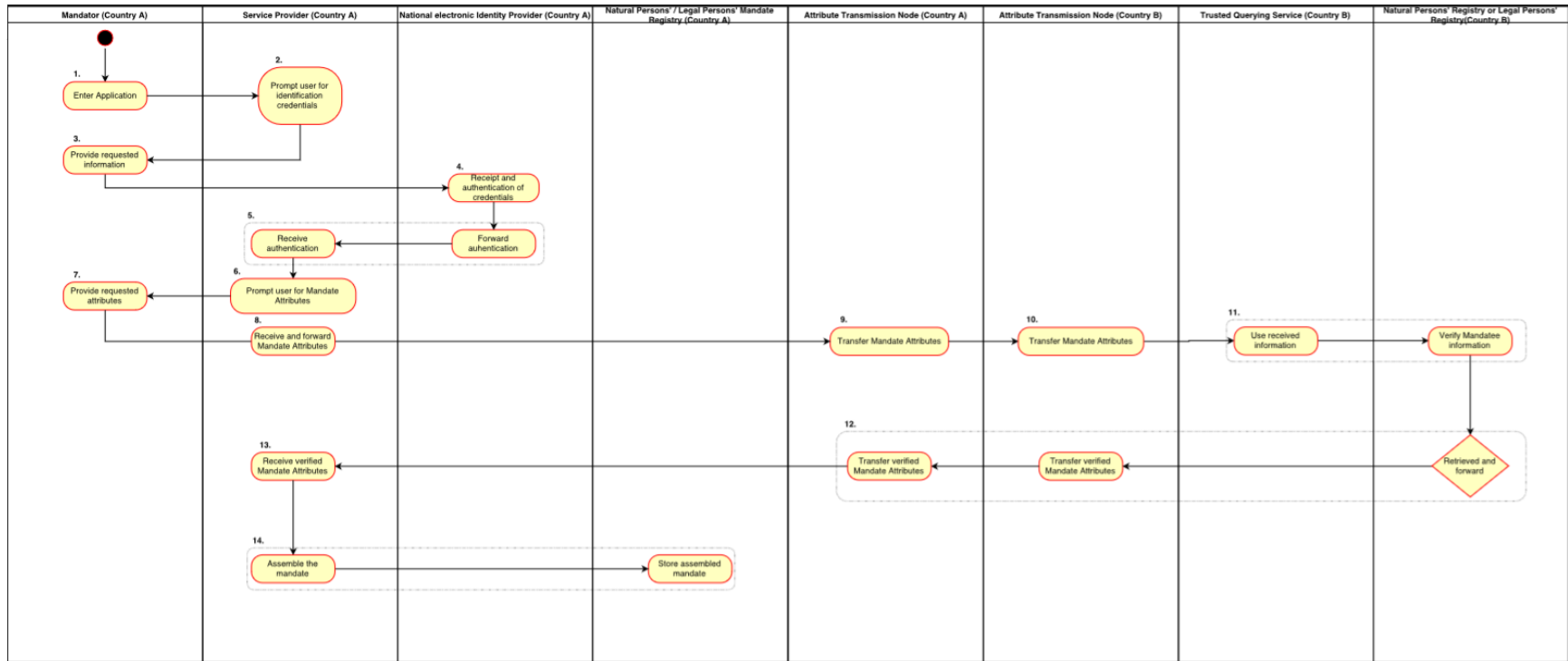
Figure 4 – Activity diagram: mandate creation

7.1.1   Use Case 1: Mandator Authentication

Description	**Mandator Authentication** is the process that allows the creator of a mandate to be authenticated by the Service Provider of Country A through the National electronic Identity Provider.
Actors	• Mandator • Country A Service Provider (Trusted Mandate Issuing Service) • Country A's National electronic Identity Provider
Goals	Authentication of the Mandator (Represented)
Assumptions	• All actors are identifiable • Unilateral mandate issued • Full legal validity of electronic documents for all services
Flow	Business level: 1. Mandator from Country A enters the Service Provider of Country A 2. The Service Provider of Country A prompts the Mandator to provide his identification credentials 3. The Mandator enters the requested credentials required for her/his authentication 4. The National electronic Identity Provider of Country A authenticates the Mandator 5. Once authenticated, the authentication is transferred back to the Service Provider

7.1.2   Use Case 2: Mandatee Identity Verification

Description	**Mandatee Identity Verification** is the process that allows the identity of the future user of a mandate, i.e. mandatee, to be verified by the Service Provider of Country A through the Natural Persons' or Legal Persons' Registry of Country B.
Actors	• Country A's Service Provider (Trusted Mandate Issuing Service) • Mandator from Country A • Attribute Transmission Node Country A • Attribute Transmission Node from Country B • Country B's Trusted Querying Service • Country B's National Persons' Registry or Legal Persons' Registry

Goals	Verification of Mandatee Identity (Representative)
Assumptions	- All actors are identifiable - Attribute Transmission Nodes implemented - Unilateral mandate issued - Full legal validity of electronic documents for all services - Consent for information exchange given
Flow	Business level: 6. Service Provider of Country A prompts Mandator to Mandate Attributes (including name, surname, Registry number - PIN, country of origin) 7. Mandator provides requested information which is forwarded to Country A's Service Provider 8. Country A's Service Provider forwards the Mandate Attributes to Country A's Attribute Transmission Node 9. Country A's Attribute Transmission Node transfers the Mandate Attributes to Country B's Attribute Transmission Node 10. Country B's Attribute Transmission Node transfers Mandate Attributes to Country B's Trusted Querying Service 11. Country B's Trusted Querying Service searches Country B's Natural Persons' Registry or Legal Persons' Registry 12. Once retrieved, the verified Mandate Attributes are forwarded through the Attribute Transmission Node of Country B to Attribute Transmission Node of Country A to finally reach the Service Provider of Country A

7.1.3 Use Case 3: Mandate Storage

Description	**Mandate Storage** is the process which leads to the assembly of the mandate and its final storage in the Natural Persons' Mandate Registry or Legal Persons' Mandate Registry of Country A.
Actors	- Country A's Service Provider (Trusted Mandate Issuing Service) - Country A's Natural Persons' Mandate Registry or Legal Persons' Mandate Registry
Goals	Creation and storage of the mandate in Country A's Natural Persons' Mandate Registry or Legal Persons' Mandate Registry
Assumptions	- All actors are identifiable - Unilateral mandate issued - Full legal validity of electronic documents for all services

	• Mandate Registry implemented
Flow	Business level: **13.** The Service Provider of Country A receives the verified Mandate Attributes **14.** Upon assembly of the mandate by the Service Provider of Country A, the mandate is forwarded and stored in the Natural Persons' Mandate Registry or the Legal Persons' Mandate Registry

7.2 Business Case 2: Registering / opening a business cross-border

Associated life event: Starting a business abroad

As described in Business Case 1, the cross-border mandates' creation section, by this point the cross-border electronic mandate for opening a business is already created and stored in the Mandates' Registry of the mandator's country of origin. Additionally, it is worth pointing out that this business case serves to illustrate the Natural to Natural relationship, whereby a natural person has given a mandate to another natural person to undertake a service or act on her/his behalf. The following description serves to explain the steps involved in using the cross-border mandate in country B which was initially created and issued in country A.

In order to effectively use the cross-border mandate for opening a business, the chosen mandatee must access the Service Provider in his own country, i.e. country B. Once having accessed the Service Provider, the mandatee will be prompted to authenticate himself through the National electronic Identity Provider. Upon authentication, the mandatee will be further prompted to provide the Mandate Attributes, such as country where the mandate is stored, i.e. the country of the mandator, along with details of the mandate, including the mandator's information.

The Mandate Attributes are transferred via the Attribute Transmission Nodes of Country B and Country A towards the Trusted Querying Service of Country A. The Trusted Querying Service will then query country A's relevant registries, i.e. the Natural Persons' Registry and Natural Persons' Mandate Registry. During this step, the query should result in mandates created and issued in country A which are given to mandatee from country B. As a result of the previously mentioned step, the Attribute Transmission Nodes of both countries transfer the mandates to the Service Provider of Country B where the mandatee is presented with a list of mandates issued in country A and addressed to him. The mandatee proceeds to choosing the mandate required to fulfil the activity in the name of the mandator, in this case the mandate for cross-border registration / opening of a business. Once the applicable mandate is selected, the Service Provider of Country B grants the Mandatee access to the initially requested service i.e. opening a business cross-border, on behalf of the mandator.
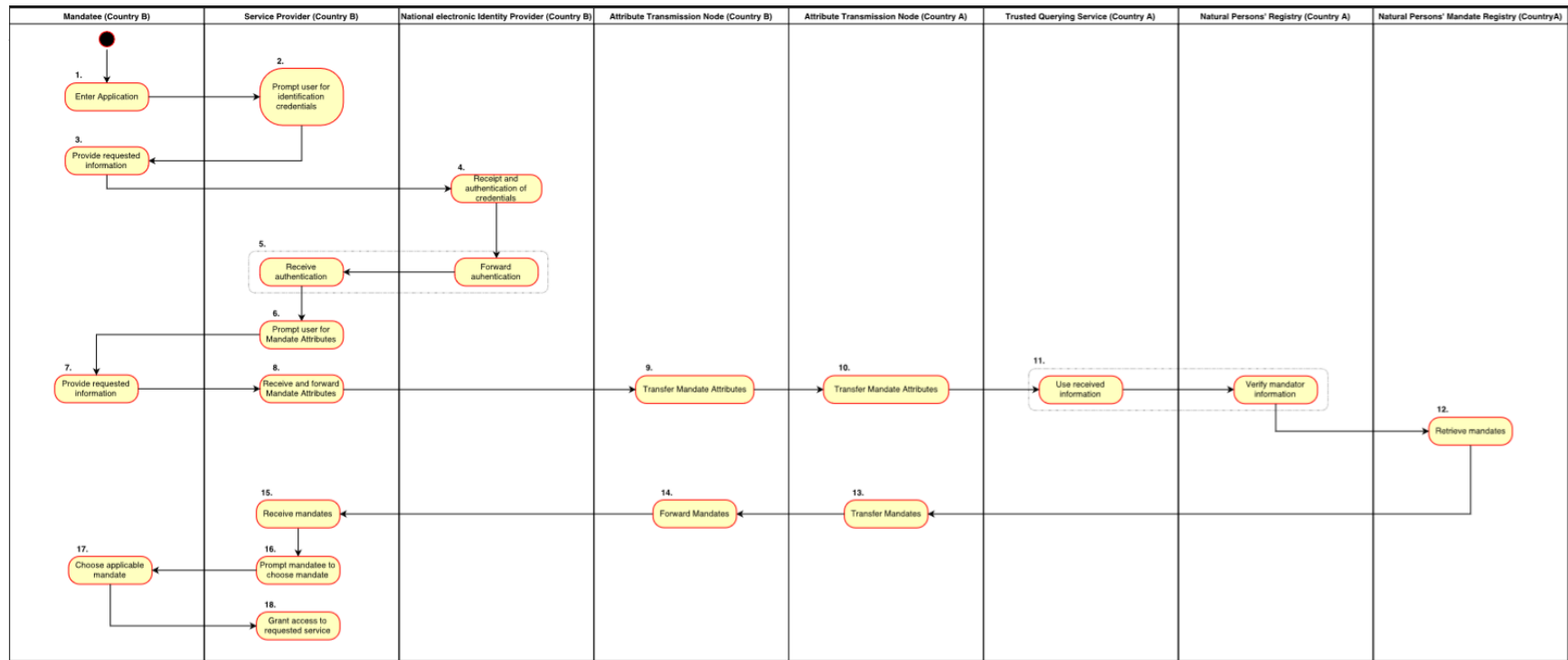
Figure 5 - Activity diagram: registering / opening a business

7.2.1 Use Case 1: Mandatee Authentication

Description	**Mandatee Authentication** is the process that allows the user of a mandate to be authenticated.
Actors	• Mandatee (Representative) • Country B's Service Provider (Business Registry) • Country B's National electronic Identity Provider
Goals	• Authentication of Mandatee (Representative)
Assumptions	• All actors are identifiable • Consent for data exchange is given • Unilateral mandate issued • Full legal validity of electronic documents for all services
Flow	Business level: 1. Mandatee from Country B enters Country B Service Provider 2. Service Provider of Country B prompts Mandatee to provide identification credentials 3. Mandatee provides requested information 4. Country B's National electronic Identity Provider authenticates the Mandatee 5. Country B's National electronic Identity Provider forwards authentication to the Service Provider of Country B

7.2.2 Use Case 2: Mandate Attributes' validation

Description	**Mandate Attributes' Validation** allows the verification of validity of Mandate Attributes. This process is designed to support the local storage of representation powers at the Service Providers site, but service provider may need to verify that powers are still valid, i.e. are not revoked. The request to invoke this process includes the mandatee's eIdentifier, together with the identifier of the represented person. The retrieved information, if successful, is the mandate data.
Actors	• Country B's Service Provider (Business Registry) • Mandatee (Representative) • Country B Attribute Transmission Node • Country A Attribute Transmission Node • Country A Trusted Service

	• Country A Natural Persons' Registry • Country A Natural Persons' Mandate Registry
Goals	Validation of Mandate Attributes
Assumptions	• All actors are identifiable • Unilateral mandate issued • Attribute Transmission Nodes implemented • Mandate Registry implemented • Basic set of mandate semantic attributes defined for cross-border usage • Full legal validity of electronic documents for all services • Consent for information exchange given
Flow	Business level: 6. Service Provider of Country B prompts Mandatee to provide Mandate Attributes 7. Mandatee provides requested information 8. Service Provider of Country B forwards the Mandate Attributes to Attribute Transmission Node of Country B 9. Attribute Transmission Node of Country B transfers Mandate Attributes to Attribute Transmission Node of Country A 10. Country A Attribute Transmission Node forwards the Mandate Attributes to the Trusted Querying Service of Country A 11. Country A's Trusted Querying Service uses received information to query Natural Persons' Registry to verify Mandator's Attributes 12. Once successfully verified, Mandate Attributes are further used to query the Natural Persons' Mandate Registry

7.2.3 Use case 3: Mandates' usage

Description	**Cross-border Mandates' usage** includes the transfer of authentication and mandates to the Mandatee, as well as the selection of the applicable mandate, and finally its usage which is required to execute the requested service on behalf of the Mandator.
Actors	• Country A Natural Persons' Mandate Registry • Country A Attribute Transmission Node • Country B Attribute Transmission Node • Country B Service Provider (Business Registry) • Mandatee (Representative)

Goals	Receipt, selection and confirmation of mandate, along with access to the requested service
Assumptions	• All actors are identifiable • Unilateral mandate issued • Attribute Transmission Nodes implemented • Mandate Registry implemented • Basic set of mandate semantic attributes defined for cross-border usage • Full legal validity of electronic documents for all services • Consent for information exchange given
Flow	Business level: 13. Successfully retrieved mandates from Country A's Natural Persons' Mandate Registry are forwarded to Attribute Transmission Node of Country A 14. Attribute Transmission Node from Country A transfers Mandates to Attribute Transmission Node of Country B 15. Service Provider of Country B receives mandates from Attribute Transmission Node of Country B 16. Service Provider of Country B prompts Mandatee to choose applicable mandate 17. Mandatee chooses applicable mandate 18. Service Provider grants access to requested service

7.3 Business Case 3: Submitting a tender for public procurement cross-border

Associated life event: Submitting a tender for public procurement abroad

In the case of submitting a tender for public procurement in a cross-border scenario, the mandate creation business case 1 does not apply. The main reason behind this is the fact that at the moment of the business creation, an intrinsic mandate is created, thus ridding the Mandator of the need for creating a specific mandate to submit a tender for public procurement to an administration different from that of the country where the business was established. It is understood that the mentioned intrinsic mandate is directly assigned to the CEO of the company at the moment of its creation, in turn allowing her/him to represent and act in the name of her/his company.

Therefore, instead of a mandate creation scenario, the business case of submitting a tender for public procurement cross-border relies heavily on a mandate usage scenario. Additionally, it is worth pointing out that this business case serves to illustrate the Legal to Natural relationship, whereby a legal person has given a mandate to a natural person to undertake a service or act on their behalf. Furthermore, the steps and processes involved in the mandate usage in this business case differ somewhat from the previous case as there is no need to query any specific mandate registry. Instead, the intrinsic mandate can be retrieved by analysing an excerpt/certificate of the company from its constitutive registry, the Legal Persons' Registry.

Correspondingly, the following description serves to describe the steps involved in "retrieving" a mandate in the business case of submitting a tender for public procurement cross-border. Thus in order to effectively use the cross-border mandate for submitting a tender for public procurement, the Mandatee (from Country B) must access the Service Provider in the country he wants to execute the service in, i.e. Country A.

Once having accessed the Service Provider, the Mandatee will be prompted to choose her/his country of origin. Once provided, the Service Provider forwards the authentication request through the Attribute Transmission Nodes of both countries to finally reach the National electronic Identity Provider of Country B. Upon authentication at the National electronic Identity Provider, the Legal Persons' Registry of Country B is queried with the Mandatee's authenticated credentials. Once a legal person, i.e. the company, linked to the natural person, i.e. the Mandatee, is retrieved, it is forwarded to the Service Provider of Country A.

In doing so, the company's certificate is transferred via the Attribute Transmission Nodes of Country B and Country A towards the Service Provider of Country A. If more than one company associated to the Mandatee were retrieved during the Legal Persons' Registry query, the user, i.e. the Mandatee, is then prompted to choose the corresponding legal entity which will be submitting the tender for public procurement. Once the choice is made, the Mandatee is given access to the requested service.
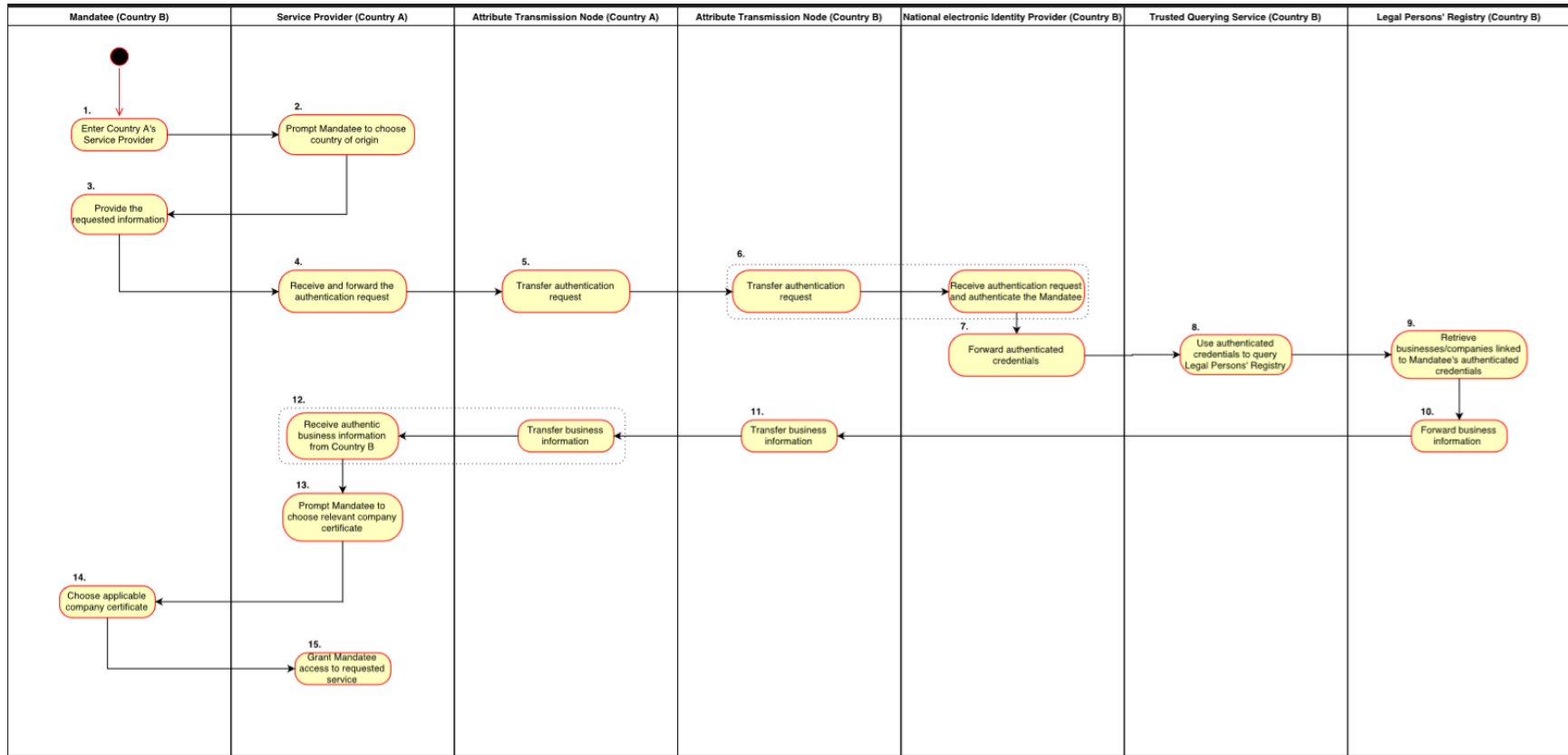
Figure 6 - Activity diagram: submitting a tender for public procurement

7.3.1 Use Case 1: Mandatee Authentication

Description	**Mandatee Authentication** is the process that allows the user of a mandate to be authenticated.
Actors	• Mandatee (Representative) • Country A's Service Provider (Public body needing public procurement) • Attribute Transmission Node of Country A • Attribute Transmission Node of Country B • Country B's National electronic Identity Provider
Goals	• Authentication of Mandatee (Representative)
Assumptions	• All actors are identifiable • Attribute Transmission Nodes implemented • Full legal validity of electronic documents for all services • Consent for information exchange given
Flow	Business level: 1. Mandatee from Country B enters Country A's Service Provider 2. Country A's Service Provider prompts Mandatee to choose country of origin 3. Mandatee provides requested information 4. The Service Provider of Country A sends the authentication request to Attribute Transmission Node of Country A 5. Transfer of authentication request from Attribute Transmission Node of Country A to Attribute Transmission Node of Country B 6. The National electronic Identity Provider of Country B receives the request via Attribute Transmission Node of Country B and the Mandatee, i.e. user from Country B, authenticates himself at National Identity Provider of Country B

7.3.2 Use Case 2: Company's certificate retrieval

Description	**Company's certificate retrieval** allows for retrieving the authentic information pertaining to a legal entity from the Legal Person's Registry, which is in turn linked to the Mandatee's authentication credentials.

Actors	- National electronic Identity Provider (Country B) - Trusted Querying Service (Country B) - Legal Persons' Registry (Country B)
Goals	Retrieval of company's registry certificate
Assumptions	- All actors are identifiable - Attribute Transmission Nodes implemented - Full legal validity of electronic documents for all services
Flow	Business level: 7. National electronic Identity Provider of Country B sends Mandatee's authenticated identity to the Trusted Querying Service of Country B 8. Trusted Querying Service of Country B uses the Mandatee's authenticated identity to query the Legal Persons' Registry 9. Legal entities linked to Mandatee's authenticated identity are retrieved

7.3.3 Use case 3: Mandates usage

Description	**Cross-border Mandates usage** includes the transfer of authentication and mandates (company certificates) to the Mandatee, as well as the selection of the applicable mandate (company certificate), and finally its usage which is required to execute the requested service.
Actors	- Trusted Querying Service of Country B - Country B Attribute Transmission Node - Country A Attribute Transmission Node - Country A Service Provider (Public body needing public procurement) - Mandatee (Representative)
Goals	Receipt, selection and confirmation of mandate (company certificate), along with access to the requested service
Assumptions	- All actors are identifiable - Attribute Transmission Nodes implemented - Full legal validity of electronic documents for all services - Consent for information exchange given
Flow	Business level:

10. Successfully retrieved company certificates from Country B's Legal Persons' Registry are forwarded to Attribute Transmission Node of Country B
11. Attribute Transmission Node from Country B transfers Mandates to Attribute Transmission Node of Country A
12. Service Provider of Country A receives the company certificates from Attribute Transmission Node of Country A
13. Service Provider of Country A prompts Mandatee to choose the applicable company certificate
14. Mandatee chooses applicable company certificate
15. Service Provider grants access to requested service

7.4 Business Case 4: Managing a bank account cross-border

Associated life event: Managing finances cross-border

As described in Business Case 1, the cross-border mandates' creation section, by this point the cross-border electronic mandate for managing a bank account is already created and stored in the Legal Persons' Mandates Registry of the mandator's country of origin. Additionally, it is worth pointing out that this business case serves to illustrate the Natural to Legal relationship, whereby a natural person has given a mandate to a legal person to undertake a service or act on their behalf. The following description serves to explain the steps involved in using the cross-border mandate in country B which was initially created and issued in country A.

In order to effectively use the cross-border mandate for managing a bank account, the chosen mandatee must access the Service Provider in its country of origin, i.e. country B. Once having accessed the Service Provider, the mandatee will be prompted to authenticate herself/himself through the National electronic Identity Provider. Upon authentication, the mandatee will be further prompted to provide the Mandate Attributes, such as country where the mandate is stored, i.e. the country of the mandator, along with details of the mandate, including the mandator's information.

The Mandate Attributes are transferred via the Attribute Transmission Nodes of Country B and Country A towards the Trusted Querying Service of Country A. The Trusted Querying Service will then query country A's relevant registry, i.e. the Legal Persons' Mandate Registry. During this step, the query should result in mandates created and issued in country A which are given to mandatee from country B. As a result of the previously mentioned step, the Attribute Transmission Nodes of both countries transfer the mandates to the Service Provider of Country B where the mandatee is presented with a list of mandates issued in country A and addressed to the representative. The mandatee proceeds to choosing the mandate required to fulfil the activity in the name of the mandator, in this case the mandate for cross-border bank account management. Once the applicable mandate is selected, the Service Provider of Country B grants the Mandatee access to the initially requested service on behalf of the mandator.

Figure 7 - Activity diagram: managing a bank account

7.4.1 Use Case 1: Mandatee Authentication

Description	**Mandatee Authentication** is the process that allows the user of a mandate to be authenticated.
Actors	- Mandatee (Representative) - Country B's Service Provider (Bank) - Country B's National electronic Identity Provider
Goals	Authentication of Mandatee (Representative)
Assumptions	- All actors are identifiable - Unilateral mandate issued - Full legal validity of electronic documents for all services
Flow	Business level: 1. Mandatee from Country B enters Country B Service Provider 2. Service Provider of Country B prompts Mandatee to provide identification credentials 3. Mandatee provides requested information 4. Country B's National electronic Identity Provider uses the provided credentials to authenticate the Mandatee, and once authenticated it is forwarded to the Service Provider

7.4.2 Use Case 2: Mandate Attributes' validation

Description	**Mandate Attributes' Validation** allows the verification of validity of Mandate Attributes. This process is designed to support the local storage of representation powers at the Service Providers site, but service provider may need to verify that powers are still valid, i.e. are not revoked. The request to invoke this process includes the Mandatee's eIdentifier, together with the identifier of the represented person. The retrieved information, if successful, is the mandate data.
Actors	- Country B's Service Provider (Bank) - Mandatee (Representative) - Country B Attribute Transmission Node - Country A Attribute Transmission Node - Country A Trusted Querying Service - Country A Legal Persons' Mandate Registry

Goals	Validation of Mandate Attributes
Assumptions	- All actors are identifiable - Unilateral mandate issued - Attribute Transmission Nodes implemented - Mandate Registry implemented - Basic set of mandate semantic attributes defined for cross-border usage - Full legal validity of electronic documents for all services - Consent for information exchange given
Flow	Business level: 5. Service Provider of Country B prompts Mandatee to provide Mandate Attributes 6. Mandatee provides requested information 7. Service Provider of Country B forwards the Mandate Attributes to Attribute Transmission Node of Country B 8. Attribute Transmission Node of Country B transfers Mandate Attributes to Attribute Transmission Node of Country A 9. Country A Attribute Transmission Node forwards the Mandate Attributes to the Trusted Querying Service of Country A 10. Country A's Trusted Querying Service uses received information to query Legal Persons' Mandate Registry and retrieve mandates

7.4.3 Use case 3: Mandates' usage

Description	**Cross-border Mandates' usage** includes the transfer of authentication and mandates to the Mandatee, as well as the selection of the applicable mandate, and finally its usage which is required to execute the requested service on behalf of the Mandator.
Actors	- Country A Legal Persons' Mandate Registry - Country A Attribute Transmission Node - Country B Attribute Transmission Node - Country B Service Provider (Bank) - Mandatee (Representative)
Goals	Receipt, selection and confirmation of mandate, along with access to the requested service

Assumptions	- All actors are identifiable - Unilateral mandate issued - Attribute Transmission Nodes implemented - Mandate Registry implemented - Basic set of mandate semantic attributes defined for cross-border usage - Full legal validity of electronic documents for all services - Consent for information exchange given
Flow	Business level: 11. Successfully retrieved mandates from Country A's Legal Persons' Mandate Registry are forwarded to Attribute Transmission Node of Country A 12. Attribute Transmission Node from Country A transfers Mandates to Attribute Transmission Node of Country B 13. Service Provider of Country B receives mandates from Attribute Transmission Node of Country B 14. Service Provider of Country B prompts Mandatee to choose applicable mandate 15. Mandatee chooses applicable mandate 16. Service Provider grants access to requested service

7.5 Business Case 5: Declaring corporate tax cross-border

Associated life event: Fulfilling business taxation obligations / End of fiscal year

As described in Business Case 1, the cross-border mandates' creation section, by this point the cross-border electronic mandate for declaring corporate tax is already created and stored in the Legal Persons' Mandates Registry of the mandator's country of origin. Additionally, it is worth pointing out that this business case serves to illustrate the Legal to Legal relationship, whereby a legal person has given a mandate to another legal person to undertake a service or act on their behalf. The following description serves to explain the steps involved in using the cross-border mandate in country B which was initially created and issued in country A.

In order to effectively use the cross-border mandate for declaring corporate tax, the chosen mandatee must access the Service Provider in its country of origin, i.e. country B. Once having accessed the Service Provider, the mandatee will be prompted to authenticate themself through the National electronic Identity Provider. Upon authentication, the mandatee will be further prompted to provide the Mandate Attributes, such as country where the mandate is stored, i.e. the country of the mandator, along with details of the mandate, including the mandator's information.

The Mandate Attributes are transferred via the Attribute Transmission Nodes of Country B and Country A towards the Trusted Querying Service of Country A. The Trusted Querying Service will then query country A's relevant registry, i.e. the Legal Persons' Mandate Registry. During this step, the query should result in mandates created and issued in country A which are given to mandatee from country B. As a result of the previously mentioned step, the Attribute Transmission Nodes of both countries transfer the mandates to the Service Provider of Country B where the mandatee is presented with a list of mandates issued in country A and addressed to the representative. The mandatee proceeds to choosing the mandate required to fulfil the activity in the name of the mandator, in this case the mandate for cross-border bank account management. Once the applicable mandate is selected, the Service Provider of Country B grants the Mandatee access to the initially requested service on behalf of the mandator.

Figure 8 - Activity diagram: declaring corporate tax

7.5.1 Use Case 1: Mandatee Authentication

Description	**Mandatee Authentication** is the process that allows the user of a mandate to be authenticated.
Actors	• Mandatee (Representative) • Country B's Service Provider (Tax authority) • Country B's National electronic Identity Provider
Goals	• Authentication of Mandatee (Representative)
Assumptions	• All actors are identifiable • Unilateral mandate issued • Full legal validity of electronic documents for all services
Flow	Business level: 1. Mandatee from Country B enters Country B Service Provider 2. Service Provider of Country B prompts Mandatee to provide identification credentials 3. Mandatee provides requested information 4. Country B's National electronic Identity Provider uses the provided credentials to authenticate the Mandatee, and once authenticated it is forwarded to the Service Provider

7.5.2 Use Case 2: Mandate Attributes' validation

Description	**Mandate Attributes' Validation** allows the verification of validity of Mandate Attributes. This process is designed to support the local storage of representation powers at the Service Providers site, but service provider may need to verify that powers are still valid, i.e. are not revoked. The request to invoke this process includes the Mandatee's eIdentifier, together with the identifier of the represented person. The retrieved information, if successful, is the mandate data.
Actors	• Country B's Service Provider (Tax authority) • Mandatee (Representative) • Country B Attribute Transmission Node • Country A Attribute Transmission Node • Country A Trusted Querying Service

	• Country A Legal Persons' Mandate Registry
Goals	Validation of Mandate Attributes
Assumptions	• All actors are identifiable • Unilateral mandate issued • Attribute Transmission Nodes implemented • Mandate Registry implemented • Basic set of mandate semantic attributes defined for cross-border usage • Full legal validity of electronic documents for all services • Consent for information exchange given
Flow	Business level: 5. Service Provider of Country B prompts Mandatee to provide Mandate Attributes 6. Mandatee provides requested information 7. Service Provider of Country B forwards the Mandate Attributes to Attribute Transmission Node of Country B 8. Attribute Transmission Node of Country B transfers Mandate Attributes to Attribute Transmission Node of Country A 9. Country A Attribute Transmission Node forwards the Mandate Attributes to the Trusted Querying Service of Country A 10. Country A's Trusted Querying Service uses received information to query Legal Persons' Mandate Registry and retrieve mandates

7.5.3 Use case 3: Mandates' usage

Description	**Cross-border Mandates' usage** includes the transfer of authentication and mandates to the Mandatee, as well as the selection of the applicable mandate, and finally its usage which is required to execute the requested service on behalf of the Mandator.
Actors	• Country A Legal Persons' Mandate Registry • Country A Attribute Transmission Node • Country B Attribute Transmission Node • Country B Service Provider (Tax authority) • Mandatee (Representative)
Goals	Receipt, selection and confirmation of mandate, along with access to the

	requested service
Assumptions	- All actors are identifiable - Unilateral mandate issued - Attribute Transmission Nodes implemented - Mandate Registry implemented - Basic set of mandate semantic attributes defined for cross-border usage - Full legal validity of electronic documents for all services - Consent for information exchange given
Flow	Business level: 11. Successfully retrieved mandates from Country A's Legal Persons' Mandate Registry are forwarded to Attribute Transmission Node of Country A 12. Attribute Transmission Node from Country A transfers Mandates to Attribute Transmission Node of Country B 13. Service Provider of Country B receives mandates from Attribute Transmission Node of Country B 14. Service Provider of Country B prompts Mandatee to choose applicable mandate 15. Mandatee chooses applicable mandate 16. Service Provider grants access to requested service

7.6 Business Case 6: Access to patient summary cross-border

Associated life event: Facing an emergency/health problems

As in Business Case 3, in the case of accessing a patient's summary in a cross-border scenario, the mandate creation Business Case 1 does not apply. The main reason behind this is the fact that at the moment a patient visits a doctor (healthcare professional), an intrinsic professional mandate is created, thus ridding the Mandator (patient) of the need for creating a specific mandate to allow the doctor abroad to access the patient summary from the patient's country of origin.
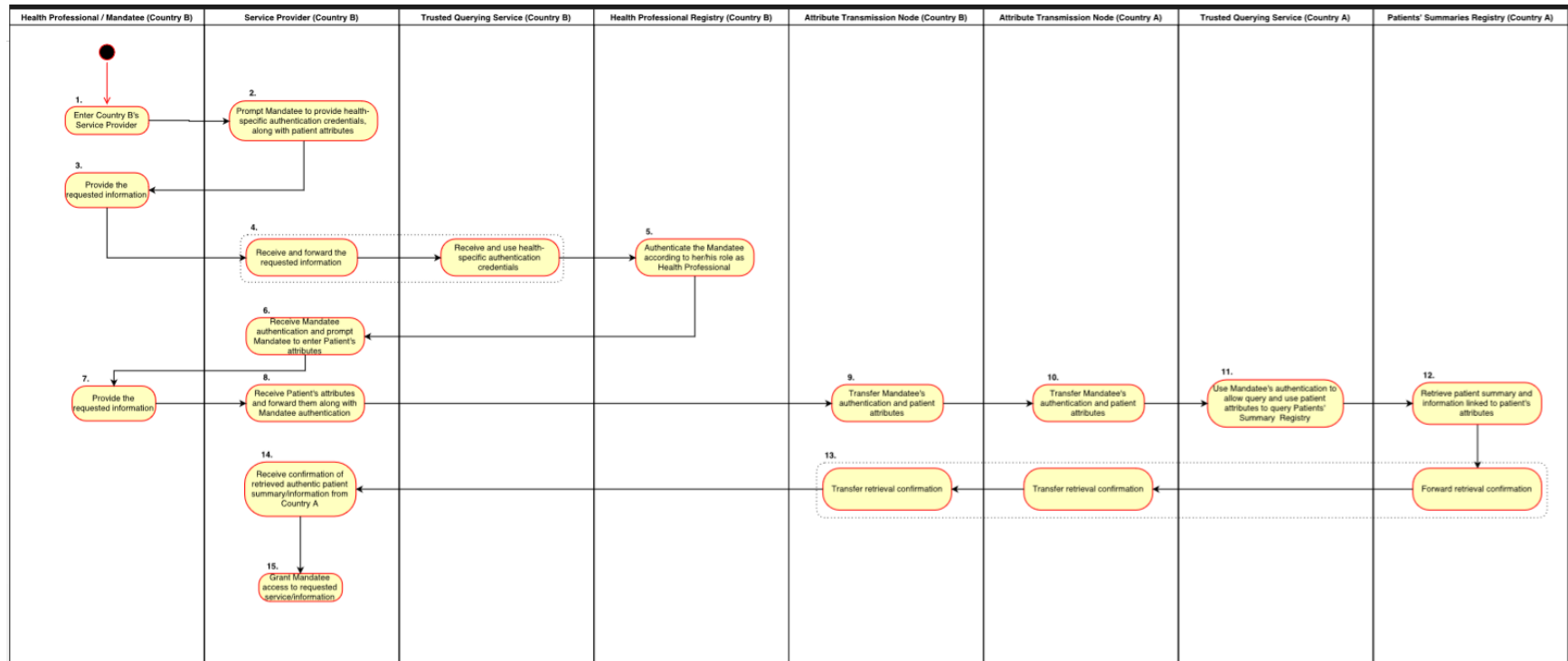
Therefore, instead of a mandate creation scenario, the business case of accessing a patient's summary cross-border relies heavily on a conceptual mandate usage scenario. Furthermore, the steps and processes involved in the mandate usage in this business case differ somewhat from the previous case as there is no need to query any specific mandate registry. Instead, the intrinsic professional mandate can be retrieved from the Health Professional Registry, whereby the confirmation of the Health Professional's identity and role in the sector will denote the authorisation the Health Professional has in terms of accessing the patient's summary. The different roles may be physician, nurse, pharmacist, etc., and different access rights will apply to each role.

Correspondingly, the following description serves to describe the steps involved in "retrieving" a mandate in the business case of accessing patients' summaries cross-border. Thus, in order to effectively use the cross-border mandate for accessing a patient's summary, the Mandatee (Health Professional from Country B) must access the Service Provider in her/his country i.e. Country B. Once having accessed the Service Provider, the Mandatee will be prompted to provide her/his sector-specific (health) authentication credentials. Once provided, the Service Provider forwards the information to Country B's Querying Service, which in turn queries the Health Professional Registry in Country B.

Once the Health Professional is retrieved in the Registry, the authentication is returned to the Service Provider of Country B. The Service Provider then prompts the Mandatee to provide the patient's attributes. Once provided, the Health Professional's authentication and patient's attributes are transferred through the Attribute Transmission Nodes of both countries to finally reach the Trusted Querying Service of Country A. The Trusted Querying Service of Country A uses the patient's attributes to retrieve the applicable patient summary.

Upon retrieval, the retrieval confirmation of the patient summary is transmitted to the Service Provider of Country B via the Attribute Transmission Nodes. Once received, the Service Provider grants the Mandatee access to the requested patient summary.

7.6.1 Use Case 1: Mandatee Authentication

Description	**Mandatee Authentication** is the process that allows the user of a mandate to be authenticated.
Actors	- Health Professional / Mandatee (Representative) - Country B's Service Provider - Country B's Trusted Querying Service - Country B's Health Professional Registry
Goals	Authentication of Health Professional / Mandatee (Representative)
Assumptions	- All actors are identifiable - Professional mandate implied - Full legal validity of electronic documents for all services - Health Professional Registry implemented
Flow	Business level: 1. Mandatee from Country B enters Country B Service Provider 2. Service Provider of Country B prompts Mandatee to provide health-specific authentication credentials 3. Mandatee provides requested information 4. Country B's Trusted Querying Service uses health-specific authentication credentials to query Health Professional Registry 5. Mandatee authenticated from data in Country B's Health Professional Registry

7.6.2 Use Case 2: Patient Attributes' validation

Description	**Patient Attributes' Validation** allows the verification of validity of Patient Attributes. This process is designed to support the local storage of patient information and data in the relevant registries. The request to invoke this process includes the mandatee's (Health Professional) eIdentifier, together with the identifier of the represented person (Patient). The retrieved information, if successful, is the patient's summary / data.
Actors	- Country B's Service Provider - Health Professional / Mandatee (Representative) - Country B Attribute Transmission Node - Country A Attribute Transmission Node - Country A Trusted Service

	• Country A Patients' Summaries Registry
Goals	Validation of Patient Attributes
Assumptions	• All actors are identifiable • Unilateral mandate issued • Attribute Transmission Nodes implemented • Patients' Summaries Registry implemented • Basic set of eHealth semantic attributes defined for cross-border usage • Full legal validity of electronic documents for all services • Consent for information exchange given
Flow	Business level: 6. Service Provider of Country B receives Mandatee authentication which resulted from Health Professional Registry query, and prompts Mandatee to provide the Patient's Attributes 7. Mandatee provides requested information 8. Service Provider of Country B forwards the Mandatee Authentication and Patient Attributes to Attribute Transmission Node of Country B 9. Attribute Transmission Node of Country B transfers Mandatee Authentication and Patient's Attributes to Attribute Transmission Node of Country A 10. Country A Attribute Transmission Node forwards the Mandatee Authentication and Patient's Attributes to the Trusted Querying Service of Country A 11. Country A's Trusted Querying Service uses received information to query Patients' Summaries Registry to verify Patient's Attributes 12. If successfully verified, Patient Summary and information linked to the initially provided Patient Attributes are retrieved

7.6.3 Use case 3: Patient's summary usage

Description	**Cross-border Patients' summaries usage** includes the transfer of patient data from Country A's Patients' Summaries Registry to Country B's Service Provider via the embedded CEF eDelivery Access Point, as well as the usage of the patient data in the cross-border scenario.
Actors	• Country A Patients' Summaries Registry • Country B Service Provider

Goals	Receipt, selection and confirmation of mandate, along with access to the requested service
Assumptions	• All actors are identifiable • Unilateral mandate issued • Patients' Summaries Registry implemented • Basic set of eHealth semantic attributes defined for cross-border usage • Full legal validity of electronic documents for all services • Consent for information exchange given • Attribute Transmission Nodes implemented
Flow	Business level: 13. Successfully retrieved mandates from Country A's Patients' Summaries Registry are forwarded to Country B's Service Provider 14. Service Provider of Country B receives confirmation of patient's summary retrieval from Country A's Patients' Summaries Registry via the Attribute Transmission Nodes 15. Service Provider grants access to requested service

8. Conclusions

As the final stage of the first task of this study on Semantic Interoperability for representation powers and mandates, conclusions identifying the main barriers have been gathered and are presented herein. Due to the fact that the AS-IS analysis was performed in accordance with the EIF LOST Interoperability layers, the presentation of the main barriers and limitations will follow a similar approach.

Furthermore, it has proven difficult to gather fully pertinent information, even after substantial desk research and consultation, as the usage of electronic powers of representation and mandates is not yet saturated across Member States. Throughout this phase of the study, it has been concluded that several of the analysed countries stood out as leaders in the matter, at least at their own national level. Moreover, the information they provided was considered most useful throughout the study as it allowed for drawing conclusions from existing and functioning systems.

Therefore, based on the work performed, it has been found that the main barrier preventing legal interoperability in the realm of representation powers and mandates is the non-existence of a common legal framework to govern the matter at a European level. Momentarily the legal evaluation of cross-border powers and mandates can only be achieved through the application of two legal assessment steps. The first step makes use of the Rome I Regulation, which enables for determining which country's laws will apply to the obligations stemming from the mandate, while the second step involves a cross-comparative approach involving the International Private Laws of the countries whose citizens are subjects in the mandate, which in turn allows to determine which country's law will govern the Mandatee/Representative.

The main barrier preventing organisational interoperability in the sphere of powers of representation and mandates is the lack of set organisational structures across Member States to handle electronic powers and mandates. Actors across Member States performing in specific roles throughout the usage of electronic representation powers and mandates should be easily identifiable and homogeneous to the furthest extent possible, as such common organisational structures would greatly contribute to organisational interoperability.

The principal barrier preventing semantic interoperability in the realm of representation powers and mandates is the non-existence of a common set of semantic mandate attributes or core vocabularies to convey the same meaning of said attributes across EU Member States. Identification attributes for powers and mandates may use the ISA Persons' Core Vocabulary or the ISA Businesses' Core Vocabulary depending on the type of person, be it natural or legal, however specific mandate attributes for denoting the mandates' specific details (objectives, requested activities, constraints, sectors, etc.) exist only at a national level in very few countries, e.g. Austria.

The main limitations preventing technical interoperability in the realm of representation powers and mandates is the heterogeneity in terms of technologies used, as well as differing maturities of the countries' technical capabilities overall. This represents a significant constraint which must be addressed at national level of each of the Member States. Nevertheless, the implementation of the eIDAS Regulation as well as the uptake of eIDAS Nodes that it prescribes for, represent a strong European effort towards improving technical interconnections among EU Members along with improving the technical interoperability capabilities of each MS individually.

9. Annex I. Service Matrix

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
Register a new legal entity	You were born and still live in Stockholm, Sweden. You want to move to Estonia in a near future and start working for yourself. You wish to register a business so that you can start as soon as you arrive. You are thus a resident in Stockholm and have to register the new business in Estonia. You mandate a friend living in Estonia to register it for you.	Registering a company	Business	eGov - A2B	L-N
	You were born and still live in Stockholm, Sweden. You want to move to Estonia in a near future and start working for yourself. You wish to register a business so that you can start as soon as you arrive. You are resident in Stockholm and have to register the new business in Estonia. Therefore you mandate a lawyer working in Estonia to register it for you.			eGov - A2B	L-L
Submit a tender for public procurement	A Spanish company with offices in several EU countries, including Belgium, mandates one of its Belgian employee to submit a tender for public procurement.	Participating in public procurement	Procurement	eGov - A2B	L-N
	A French company mandates a Finnish company to submit a tender for public procurement in its name.			eGov - A2B	L-L
Open a bank account	You currently live in Lithuania and you are planning to move back to Germany where you were born. For administrative reasons, you need a German bank account before moving to Germany. To do so, you mandate your brother in	General administration: moving	Banking	eService - B2C	N-N

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
	order for him to be able to do the administrative procedures for you.				
	You currently live in Lithuania and you are planning to move back to Germany where you were born. For administrative reasons, you need a German bank account before moving to Germany. To do so, you mandate a German accountant to do the administrative procedures for you.			eService - B2C	N-L
Submit a corporate tax declaration	A Dutch company needs to declare taxes in Poland. It mandates its CEO to take care of this process in its name.	Paying taxes	Financial	eGov - A2B	L-N
	A Dutch company needs to declare taxes in Poland. It mandates an accounting company in Poland to take care of this process in its name.			eGov - A2B	L-L
Access & use a business service portal	You are the owner of a company in Germany and you currently live in Belgium. Your company mandates one of the employees to access and use the German business service portal in its name.	Regular business operations	Business	eGov - A2B	L-N
	You are the owner of a company in Germany and currently live in Belgium. Your company mandates another company to access and use the German business service portal in the name of your company.			eGov - A2B	L-L

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
Register real estate (transfer)	Due to an advanced age, Ms Smith, currently living in France, wants to transfer the rights over her countryside house in Belgium to her children. For that, she requests a mandate for her sister to act in her name for any potential issues the house might require.	Finding a place to live	Administrative	eGov - A2C	N-N
	Due to an advanced age, Ms Smith, currently living in France, wants to transfer the rights over her countryside house in Belgium to her children. For that, she requests a mandate for her lawyer to act in her name and take care of the rights transfer.			eGov - A2C	N-L
Access to patient summary/health records	You are a Danish citizen on holidays in Portugal. You have been admitted at the hospital because you felt unwell. Before undergoing tests and giving you medicines, you should access your health records. You thus mandate a friend living in Denmark to access it and send it to you.	Facing an emergency / health problem	Health	eService - B2C	N-N
	You were born and lived in the Belgium for many years. You now live in Roma, Italy. You have become unwell with a stomach complaint that appears to be an allergy. Your Italian doctor wants you to undergo several tests but first wants to access patient summary documents from your country of birth (not your Italian medical documents) to examine your medical records. For that, you provide a mandate for the Italian doctor to access your Belgian health records.			eService - B2C	N-L

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
Manage a bank accounts	You currently live in Czech Republic but you also have a bank account in Denmark. You need to manage it, but for medical reasons you cannot leave your country at the moment. You mandate a friend living in Denmark to manage it for you.	Regular business operations	Banking	eService - B2C	N-N
	You currently live in Czech Republic but you also have a bank account in Denmark. You need to access it, but for medical reasons you cannot leave your country at the moment. You mandate a Danish accountant to access it for you.			eService - B2C	N-L
Request ID documents	You were born and lived in Brussels. You now live in Madrid, Spain and you have lost your ID documents from your country of birth (not your Spanish ID documents). You need to request ID documents from Belgium. You provide a mandate so that someone from your family in Belgium can go through this administrative process for you.	Obtaining identity/ personal documents	Administrative	eGov - A2C	N-N
	You were born and lived in Brussels. You now live in Madrid, Spain and you have lost your ID documents from your country of birth (not your Spanish ID documents). You need to request ID documents from Belgium. You provide a mandate so that your lawyer in Belgium can do this administrative process for you.			eGov - A2C	N-L
Register for a pension	After working in Cyprus for many years, you now live in Italy. You would like to register for a pension in Cyprus. To do so, you mandate a friend living there to do the registration process for you.	Retiring	Administrative	eGov - A2C	N-N

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
	After working in Finland for many years, you are back to Croatia where you were born. You would now like to register for your pension in Finland. As you currently don't have the time to travel, you mandate a company to do it for you.			eGov - A2C	N-L
Accept/disclaim of inheritance	Jack was born in Munich, Germany. At the age of 28 he has moved to Spain where he has lived for the last 30 years. He has been informed that his recently deceased aunt included him in her inheritance will. He is considering setting a mandate with his brother so he can proceed and deal with the entire administrative part of the inheritance.	Dealing with decease and inheritance	Administrative	eGov - A2C	N-N
	Jack was born in Munich, Germany. At the age of 28 he has moved to Spain where he has lived for the last 30 years. He has been informed that his recently deceased aunt included him in her inheritance will. He is considering setting a mandate with his attorney so he can proceed and deal with the entire administrative part of the inheritance.			eGov - A2C	N-L
Contract loans with banks	An Italian company desires to bid for an important government contract that would make the business grow, but it is unsure it has the needed funding to fulfil the contract. Thereby the company is negotiating a loan with a local bank in Belgium via a mandate with the CEO the company chose as a representing.	Financing a company	Banking	eService - B2B	L-N

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
	John, living in Portugal, would like to buy an apartment in France. Therefore, he would like to get a loan in a French bank. He mandates a French accountant company to contract and negotiate the loan in France.			eService - B2C	N-L
	John, living in Portugal, would like to buy an apartment in France. Therefore, he would like to get a loan in a French bank. He mandates his brother, already living in France, to contract and negotiate the loan.	Regular business operations		eService - B2C	N-N
	A Spanish company would like to grow its business and open new shops in Portugal. It mandates its lawyer to negotiate and contract the necessary loan in Portugal.			eService - B2B	L-L
Income tax declaration	M. Dupont, lives in France but works in Belgium. He mandates a friend in Belgium in order to take care of his income tax declaration.	Paying taxes	Financial	eGov - A2C	N-N
	M. Dupont, lives in France but works in Belgium. He mandates an accountant in Belgium in order to take care of his income tax declaration.			eGov - A2C	N-L
Pay social contributions for employees	A company is executing a standard procedure by declaring the social contributions for employees affected by the corporation. The company mandates an accounting company to do it.	Regular business operations	Financial	eGov - A2B	L-L
	A company is executing a standard procedure by declaring the social contributions for employees affected by the corporation. The company mandates one of its employees to do it in the name of the company			eGov - A2B	L-N

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
Access to academic records	During your student life, you went in Erasmus to Austria. You are now applying for a job and the company would like to see your academic certificates. To do so, you provide a mandate to this company so that they can request the necessary documents.	Getting educated	Education	eService - B2C	N-L
Incorporate a public, a limited or a cooperative company	In a merger and acquisition process between company A, located in Belgium, and company B, located in France, company A gives power to company B for all the necessary administrative requirements in Belgium.	Regular business operations	Business	eService - B2B	L-L
	In a merger and acquisition process between company A located in Belgium, and company B, located in France, company A gives power to the CEO of company B for all the necessary administrative requirements in Belgium.			eService - B2B	L-N
Incorporate associations and trusts	In a merger and acquisition process between a non-profit organisation in Belgium (A), and another one located in France (B), the company A gives power to the company B for all the necessary administrative requirements in Belgium.	Regular business operations	Business	eService - B2B	L-L
	In a merger and acquisition process between a non-profit organisation in Belgium (A), and another one located in France (B), the company A gives power to the CEO of the company B for all the necessary administrative requirements in Belgium.			eService - B2B	L-N

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
Register a new employee	A company registers new employees by including their details the first time the company pay them, such as information the company has collected from them, the tax code and starter declaration that they've worked out, pay and deductions. To do so, the company mandates an employee to do it in the name of the company.	Hiring an employee	Administrative	eGov - A2B	L-N
Apply for a driver´s licence	Sophie, 25 years old, born in France and now living in Austria is requesting a replacement of her French driving licence because her current one got stolen. She mandates her father to take care of the administrative procedures.	Driving a vehicle	Administrative	eGov - A2C	N-N
	Sophie, 25 years old, born in France and now living in Austria is requesting a replacement of her French driving licence because her current one got stolen. She mandates her lawyer to take care of the administrative procedures.			eGov - A2C	N-L
Vote	You are a French citizen residing in Belgium. You mandate your father, living in France, to vote in your name during the French national elections.	Voting	Administrative	eGov - A2C	N-N
Payment services: mandate has to be granted by the payer to the biller	You live a Germany and work in Luxembourg, you mandate a telecom company from Luxembourg to collect a payment from your German bank account every month for your phone subscription.	Regular business operations	Banking	eService - B2C	N-L
	A company (A) located in Belgium mandates another company (B) located in France, to authorise the collection of a payment on a regular basis for a newspaper subscription.			eService - B2B	L-L

Service	Use Case description	Life / Business event	Domain	Relationship	Representation
Act in the name of a patient at a health facility	You are a French citizen on holidays in Italy. You are sick and have been admitted at the hospital. You mandate your friend (an Italian citizen) to act in your name as you think he would take better decisions regarding your health.	Facing an emergency / health problem	Health	eService - C2C	N-N
	You are sick and have been admitted at the hospital. You mandate the hospital to act in your name and to take medical decisions for you. As the hospital assigned you a doctor, his is the one mandated to do so.			eService - B2C	N-L
Enrol as a student	A polish company is paying a master for its newcomer employees. A German employee provides a mandate so that the polish company can fulfil the required documentation in his name.	Getting educated	Education	eService - B2C	N-L
Register for legal aid: representation for legal cases	You were born and lived in France until you moved to Austria where you lived in a rented accommodation until. You are now back in Paris, France. After returning to France, you have been corresponding with your former landlord about damages he alleges you caused to the flat you used to live in. He is now suing you for the damage. You thus require legal aid in Austria and approach a body to register for help with this problem. You request a lawyer via a mandate to represent you in Austria.	Dealing with the law	Legal	eService - B2C	N-L

10.   Annex II. Assessment framework information

The following chart was used to assess each MS State of play

Q/Area	Initial (1)	Emerging 2)	Applied (3)	Managed (4)	Leading (5)
Q6	**No** legal basis for electronic nor paper mandates and **no** equivalence between electronic and paper formats	Legal basis **only** for paper mandates and **no** equivalence between electronic and paper formats	There **is** legal basis for electronic mandates and **no** equivalence between electronic and paper formats	-	There is legal basis for electronic mandates and there is equivalence between electronic and paper formats
Q7	**No** explicit situations and instances defined in the legislation and **no** types of mandates are defined	-	No explicit situations and instances defined in the legislation, but some types of mandates are defined	-	Situations and instances **are** defined and types of mandates **are** defined
Q8	**No** requirements **nor** characteristics defined for the calidity of mandates	Information contents (e.g. Unique ID, DoB, time & financial constraints) **are** defined but **no** validation by authority is prescribed	**No** information contents defined but validation by authority **is** prescribed	-	Information contents are defined and validation by authority is prescribed
Q9	**Many** legal constraints exist	-	**Some** legal constraints	-	**No** legal constraints
Q10	**No** cross-border	-	STORK 2.0	-	**Existing** agreements and

Q/Area	Initial (1)	Emerging 2)	Applied (3)	Managed (4)	Leading (5)
	agreements and cooperation				cooperation + **STORK 2.0**
Q11, Q12	Organisation for P&M Management is **not** defined	-	Organisation for P&M Management **is partially** defined	-	Organisation for P&M Management is fully defined
Q13, Q14	**No** interoperability, even though **it is** possible and needed	**No** interoperability, it **is not** possible but it **is** needed	There **is** interoperability and it **is** needed	There **is** interoperability even though it **is not** needed	No interoperability, it is not needed as all is done through a central hub
Q15	There are **no** reference data/code lists/core vocabularies. **Not** at national level, **nor** at international (reusable European solutions)	-	There are reference data/code lists/core vocabularies only at national level, specific to the country's approach.	-	There **are** reference data, and they **are** largely reusable (International/European solutions)
Q16	There are **no** semantic solutions for differentiation of mandate attributes in place		There are national semantic solutions for the differentiation of mandate attributes		There a**re international** reusable semantic solutions for differentiation of mandate attributes in place
Q17, Q18	There are **no**		There are national		There are international

Q/Area	Initial (1)	Emerging 2)	Applied (3)	Managed (4)	Leading (5)
	common standards for the exchange of information		common standards for the exchange of information		reusable common standards in place for the exchange of information
Q19, Q20	There are **many** technical requirements needed in order to use/handle P&M		There are **some** technical requirements needed in order to use/handle P&M		There are few technical requirements needed in order to use/handle P&M
Q21	There are **no** means in place to electronically create, use and revoke mandates		There **are decentralised**/fragmented means put in place to create, use and revoke mandates electronically		There are centralised/SPOC electronic means put in place to create, use and revoke mandates